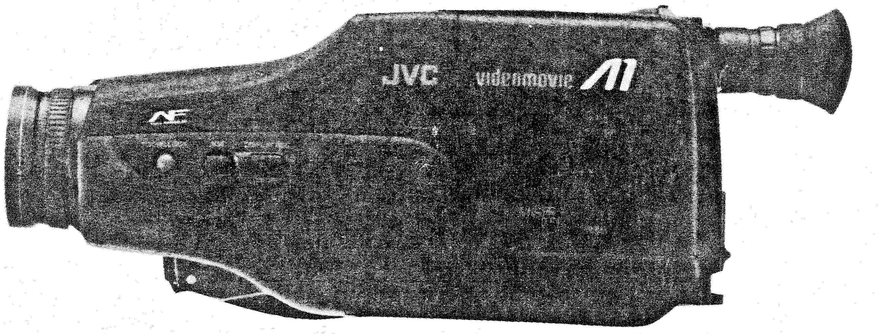
JVC

SERVICE MANUAL

VHS VIDEO MOVIE

VHS C PAL

GR-A1EG/EK



CCD
Charge Coupled Device

FULL RANGE AF

VHS C PAL

HQ
High Quality

SPECIFICATIONS

Format : VHS standard
Power source : DC 9.6 V ⎓
Power consumption : 8 W
Signal system : PAL-type
Recording system : Luminance: FM recording
Colour: Converted sub-carrier direct recording
Conforms to VHS standard
Cassette : VHS-C cassette
Tape speed : 23.39 mm/sec
Recording time
Max. : 30 minutes (with EC-30 cassette)

VIDEO
Output : 1 Vp-p, 75 ohms, unbalanced (via AV OUT connector)
S/N ratio : More than 43 dB (with Rohde & Schwarz noise meter)

AUDIO
Output : -6 dBs, 1 k-ohm (via AV OUT connector)
Pickup : 1/2"-format CCD
Minimum required illumination : 10 lux (at F/1.4)
Illumination range : 10 – 100,000 lux

Lens : F/1.4, f = 8.5 – 51 mm. 6:1 power zoom lens with auto iris control and macro position, filter diameter 52 mm
Viewfinder : Electronic viewfinder with 0.6" black/white CRT
Selectable high-speed shutter : 1/1000 sec.
White balance adjustment : Full-auto
Operating temperature : 0°C to +40°C
Operating humidity : 35 % to 80 %
Storage temperature : -20°C to +50°C
Weight : 1.1 kg (with viewfinder)
Dimensions : 117(W) x 126(H) x 316(D) mm (incl. viewfinder)

AA-V6EG SPECIFICATIONS
Power requirement : AC 110 – 240 V∿, 50/60 Hz
Power consumption : 23 watts
Output : DC 14 V ⎓ 1.1 A (Charge)
DC 9.6 V ⎓ 1.2A (VideoMovie)
Charging system : Constant current, peak detection, timer controlled
Dimensions : 150(W) x 42(H) x 69(D) mm
Weight : Approx. 380 g

C-P6U SPECIFICATIONS
Type : VHS cassette adapter
Dimensions : 188(W) x 25(H) x 104(D) mm
Weight : 240 g
Accessory : "R6"-size battery x 1

Provided accessories:

AC power adapter/battery charger	AA-V6EG
Cassette adapter	C-P6U
Battery pack	BN-V6GU
Shoulder strap	
Lens cap	
Battery for clock operation	

Design and specifications subject to change without notice.

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October 1989

TABLE OF CONTENTS

Section Title Page

Important Safety Precautions

INSTRUCTIONS

1. SERVICE CAUTION AND DISASSEMBLY

1.1 PRECAUTIONS 1-1
1.2 REQUIRED TEST EQUIPMENTS, FIXTURES/TOOLS AND OTHERS 1-1
1.3 REPLACEMENT OF CHIP PARTS 1-3
1.4 REMOVING OF FLAT ICs 1-4
1.5 DISASSEMBLY OF CAMERA SECTION 1-5
1.6 DISASSEMBLY OF DECK SECTION 1-11
1.7 INSPECTION AND MAINTENANCE 1-16

2. DECK SECTION ADJUSTMENT

2.1 BEFORE MAKING ADJUSTMENTS 2-1
2.2 REGULATOR CIRCUIT 2-2
2.3 SERVO & INTERCHANGEABILITY 2-2
2.4 PRE AMP CIRCUIT 2-6
2.5 Y (LUMINANCE) CIRCUIT 2-7
2.6 COLOR CIRCUIT 2-9
2.7 AUDIO CIRCUIT 2-10

3. CAMERA SECTION ADJUSTMENT

3.1 BEFORE ADJUSTMENTS 3-1
3.2 Y. (LUMINANCE) CIRCUIT 3-2
3.3 COLOR CIRCUIT 3-3
3.4 AUTOFOCUS ADJUSTMENT 3-7
3.5 ELECTRONIC VIEWFINDER 3-9

4. OVERALL WIRING AND BLOCK DIAGRAMS

4.1 OVERALL WIRING AND POWER SYSTEM BLOCK DIAGRAM 4-1
4.2 SERVO (MAIN) BLOCK DIAGRAM 4-2
4.3 Y/C BLOCK DIAGRAM 4-3
4.4 VIDEO, SSG BLOCK DIAGRAMS 4-4

5. CHARTS AND DIAGRAMS

5.1 CIRCUIT BOARD LOCATIONS 5-1
5.2 SCHEMATIC DIAGRAM NOTES 5-2
5.3 REPLACING SUBMINIATURE "CHIP" PARTS 5-3
5.4 KEY TO ABBREVIATIONS 5-4
5.5 MAIN TYPES OF ACTIVE AND PACKAGE CIRCUITS 5-5
5.6 REGULATOR (MAIN) SCHEMATIC DIAGRAM 5-6
5.7 AUDIO (MAIN) AND MIC AMP (Y/C) SCHEMATIC DIAGRAM 5-7
5.8 MECHANISM CONTROL (MAIN) SCHEMATIC DIAGRAM 5-8
5.9 SERVO (MAIN) SCHEMATIC DIAGRAM 5-9
5.10 MAIN (REG/AUDIO/MECHACON/SERVO) CIRCUIT BOARD 5-10
5.11 Y/C SCHEMATIC DIAGRAM 5-12
5.12 Y/C CIRCUIT BOARD 5-13
5.13 DRUM MDA SCHEMATIC DIAGRAM 5-14
5.14 DRUM MDA, UPPER DRUM AND TRIGGER SWITCH CIRCUIT BOARDS 5-15
5.15 OPERATION SCHEMATIC DIAGRAM 5-15
5.16 VIDEO SCHEMATIC DIAGRAM (for EG model, #1～1166) 5-16
5.17 VIDEO, FAW, SC, VIDEO SUB AND CONTROL CIRCUIT BOARDS (for EG model, #1～1166) 5-18
5.18 VIDEO SCHEMATIC DIAGRAM (for EK model and EG model #1167～) 5-20
5.19 VIDEO AND FAW SUB CIRCUIT BOARDS 5-22
5.20 SSG SCHEMATIC DIAGRAM (for EG model #1～1166) 5-24
5.21 SSG CIRCUIT BOARD (for EG model #1～1166) 5-25
5.22 SSG SCHEMATIC DIAGRAM (for EK model and EG model #1167～) 5-26
5.23 SSG CIRCUIT BOARD (for EK model and EG model #1167～) 5-27
5.24 AF SCHEMATIC DIAGRAM 5-28
5.25 AF CIRCUIT BOARD 5-29
5.26 ELECTRICAL VIEWFINDER SCHEMATIC DIAGRAM 5-30
5.27 ELECTRICAL VIEWFINDER CIRCUIT BOARD 5-31
5.28 PRE/REC SCHEMATIC DIATRAM 5-32

6. EXPLODED VIEWS AND PARTS LIST

6.1 STANDARD PART NUMBER CODING 6-1
6.2 PACKING ASSEMBLY (FOR EG) (M1) 6-1
6.3 FINAL ASSEMBLY (M2) 6-2
6.4 MECHANISM ASSEMBLY (M3) 6-4
6.5 OPTICAL BLOCK ASSEMBLY (M4) 6-6
6.6 ELECTRONIC VIEWFINDER ASSEMBLY (M5) 6-7
6.7 PACKING ASSEMBLY (FOR EK) (M8) 6-8

7. PARTS LIST

7.1 STANDARD PART NUMBER CODING 7-2
MAIN BOARD ASSEMBLY (01) 7-6
Y/C BOARD ASSEMBLY (02) 7-10
PRE REC BOARD ASSEMBLY (03) 7-13
DRUM MDA BOARD ASSEMBLY (04) 7-13
TRIGGER SW BOARD ASSEMBLY (05) 7-14
SENSOR BOARD ASSEMBLY (08) 7-14
VIDEO BOARD ASSEMBLY (11) (for EK model and EG model #1167～) 7-14
VIDEO BOARD ASSEMBLY (11) (for EG model #1～1166) 7-18
SSG BOARD ASSEMBLY (12) (for EK model and EG model #1167～) 7-22
SSG BOARD ASSEMBLY (12) (for EG model #1～1166) 7-24
AF BOARD ASSEMBLY (13) 7-26
CONTROL BOARD ASSEMBLY (14) 7-28
DRUM BOARD ASSEMBLY (30) 7-28
E. VF BOARD ASSEMBLY (50) 7-28
END SENSOR BRACKET ASSEMBLY (55) 7-29

8. TECHNICAL INFORMATIONS

8.1 FUNCTIONS OF MECHACON CPU TERMINALS (IC401) 8-1
8.2 SERVO CIRCUIT 8-2
8.3 INDICATOR IC 8-4

Section **Title** **Page**

9. SERVICE GUIDE

9.1 EMERGENCY DISPLAY 9-1

9.2 TROUBLE DIAGNOSIS BY OPEN CIRCUIT PROTECTOR 9-1

10. AC POWER ADAPTER (for EK MODELS)

10.1 ELECTRICAL ADJUSTMENT 10-1

10.2 MAIN CIRCUIT (01 MAIN board) 10-1

10.3 CIRCUIT BOARDS 10-2

10.4 MAIN SCHEMATIC DIAGRAM 10-3

10.5 CABINET ASSEMBLY <M2> 10-4

10.6 ELECTRICAL PARTS LIST 10-4

10.7 TECHNICAL INFORMATION 10-6

JVC

INSTRUCTIONS

GR-A1

CAMERA-RECORDER/PLAYER

MANUEL D'INSTRUCTIONS: CAMERA-ENREGISTREUR/LECTEUR GR-A1E
BEDIENUNGSANLEITUNG: KAMERA-RECORDER GR-A1E
MANUAL DE INSTRUCCIONES: CAMERA/GRABADORE GR-A1E
GEBRUIKSANWIJZING: KAMERA/RECORDER GR-A1E
BRUKSANVISNING: KAMERA/BANDSPELARE GR-A1E
MANUALE DI ISTRUZIONI: TELECAMERA/REGISTRATORE GR-A1E

Specifically for the GR-A1E/AA-V6EG
Spécial pour le GR-A1E/AA-V6EG
Für modellausführung GR-A1E/AA-V6EG
Especialmente para la GR-A1E/AA-V6EG
Speciaal voor de GR-A1E/AA-V6EG
Speciellt avsedd för GR-A1E/AA-V6EG
Specificio per il GR-A1E/AA-V6EG

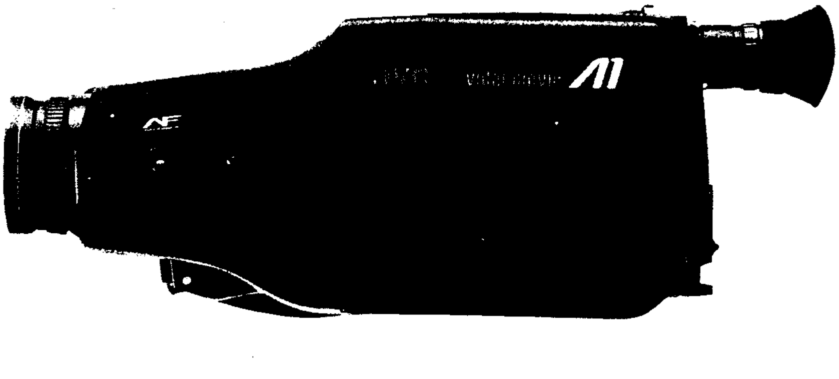
videomovie

VHS C
PAL

HQ
High Quality

CCD
Charge Coupled Device

AF
FULL RANGE AF



SAFETY PRECAUTIONS

WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

This equipment should be used with DC 9.6 V ⎓ only.

CAUTION

To prevent electric shocks and fire hazards, do NOT use any other power source.

The AA-V6EG AC Power Adapter/Battery Charger should be used with 110 – 240 V~, 50/60 Hz only.

Caution:

To prevent electric shocks and fire hazards, do NOT use any other power source.

IMPORTANT (In the United Kingdom) Mains Supply (240 V~, 50 Hz only)

IMPORTANT

Do not make any connection to the Larger Terminal coded E or Green. The wires in the mains lead are coloured in accordance with following code:

Blue to N (Neutral) or Black
Brown to L (Live) or Red

If these colours do not correspond with the terminal identifications of your plug, connect as follows:
Blue wire to terminal coded N (Neutral) or coloured Black.
Brown wire to terminal coded L (Live) or coloured Red.
If in doubt – consult a competent electrician.

Note

We recommended that you should disconnect the AC cord from the outlet.

Warning on lithium battery

The battery used in this device may present a fire or chemical burn hazard if mistreated. Do not recharge, disassemble, heat above 100°C or incinerate.
Replace battery with Panasonic (Matsushita Electric), CR 2025, use of another battery may present a risk of fire or explosion.

- Dispose of used battery prompty.
- Keep away from children.
- Do not disassemble and do not dispose of in fire.

CAUTION:

To prevent shock, do not open the cabinet. No user serviceable parts inside. Refer servicing to qualified personnel.

NOTES:

- The rating plate (serial number plate) and safety caution of the main unit are on its bottom.
- The rating plate (serial number plate) of the AC power adapter/battery charger is on its bottom.

This equipment has been produced to comply with Directive number 82/499/EEC.

The provided viewfinder is the YU30315D. Do not use any other viewfinder with the GR-A1E.

VHS C
PAL

HQ
High Quality

- VideoMovie is designed exclusively for the VHS C video cassette. Only cassettes marked VHS C can be used with this unit.
- HQ VHS is compatible with existing VHS equipment.

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PRECAUTIONS

For safety, strictly observe the following instructions.

- Do not disassemble or modify the unit.
- Prevent inflammables, water and metallic objects from entering the unit.
- Do not use the unit when there is lightning in the vicinity. Disconnect the power cable of connected equipment.

Avoid using the unit under the following conditions:

- Places subject to excessive humidity or dust.
- Near appliances generating strong magnetic or electric fields (speakers, broadcasting antennas, etc.).
- Places subject to soot or steam such as near a cooking stove.
- Places subject to excessive shock or vibration.
- Near a television set (rolling pictures or howling might result).
- Extremely hot places.

Do not expose the unit to high temperatures over 40°C for long periods.

If the unit should be subjected to direct sunlight, or left in a closed car in summer, or placed near a heater, the CCD and the auto-focus sensor may deteriorate and the cabinet may become deformed. Furthermore, this also may cause the transistors and other electronic and mechanical parts to malfunction. Remember the following:

- Do not leave the unit in places of over 50°C.
- Do not use the unit in places of over 40°C.
- Do not use the unit in places of below 0°C.
- Protect the unit from excessively dry or excessively humid conditions (below 35 % or above 80 % humidity).
- For long storage, select a place between -10°C and 30°C.

Take special care for protection of the unit.

- Do not allow the unit to become wet.
- Do not leave the unit in closed cars on hot summer days.
- Take special care not to drop the unit or strike it against hard objects. Protect from shocks during transportation.

Make it a rule to observe the following instructions.

- Do not remove the battery pack or disconnect other power supply units during recording or playback before pressing the POWER switch to OFF. If not observed, this will cause tape damage.
- When the unit is not in use, remove the battery pack.

Keep the lens and viewfinder eyepiece always clean.

- When the lens is dirty or dusty, blow it off first and then gently wipe with a soft brush or lens cleaning paper.
- The lens is likely to become moldy if left dirty.

Be careful not to damage the CCD.

- Do not keep the lens directed at extremely bright objects such as the sun or other light sources for long periods. Although the CCD is less susceptible to such burn than a tube would be, caution should be exercised when using this unit. Most importantly, the lens should be capped except while actually shooting.
- Do not direct the eyepiece of the viewfinder at the sun.

Auto-focus requires a bit of consideration.

- When a filter or a special-effect lens is to be attached to the end of the lens, be sure to turn power off.

Handle the unit carefully.

- Protect the microphone from excessive shocks.
- Do not carry the unit by holding it only by the viewfinder.

Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▨) parts are critical for safety.
   Replace only with specified part numbers.
   Note: **Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.**

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

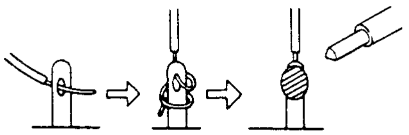


Fig. 1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

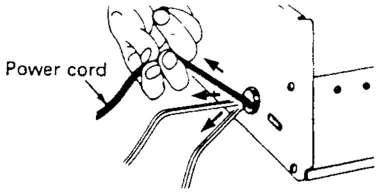


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.
    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

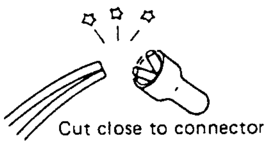


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

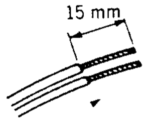


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

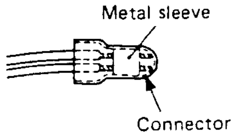


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

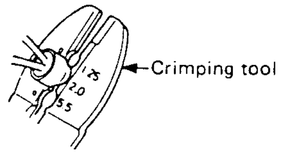


Fig. 6

(5) Check the four points noted in Fig. 7.

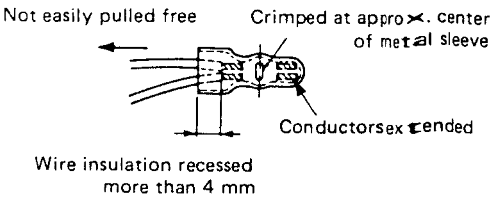

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
   Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
   Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
   When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

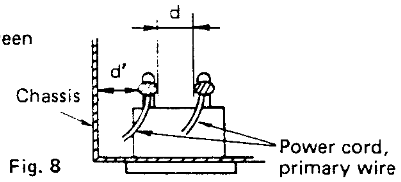


Fig. 8

4. **Leakage current test**
   Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
   Measuring Method: (Power ON)
   Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

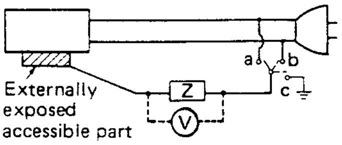


Fig. 9

5. **Grounding (Class I model only)**
   Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
   Measuring Method:
   Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

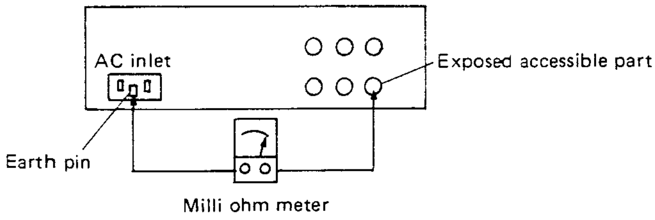


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	–	AC 900 V 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

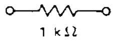
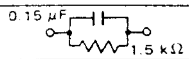
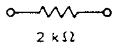
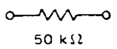
AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	 1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	 0.15 μF 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	 2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		 50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

Moisture condensation prevents use of the unit.

- You have observed that pouring a cold liquid into a glass will cause drops of water to form on the glass's outer surface. This same phenomenon occurs on the head drum of a video recorder when the recorder is moved from a cool place to a warm place, after heating in a cold room, under extremely humid conditions or in a place directly subjected to the cool air from an air conditioner.
- Moisture on the head drum can cause severe damage to the video tape, and can lead to internal damage to the recorder itself.
- If moisture condensation occurs on the head drum, a condensation warning appears in the viewfinder and the unit enters the Stop mode, unable to function. In such a case, wait for a few hours until the indicator disappears.

Maintenance

- When the cabinet is dusty, clean by gently wiping with a soft cloth.
- Avoid the use of strong cleaning agents such as benzine or alcohol as they may damage the cabinet.
- Cleaning should be done only after the battery pack has been removed or other power units have been disconnected.

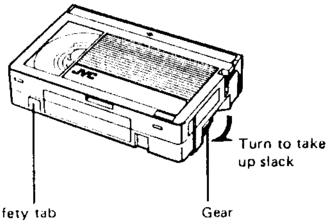
Serious malfunctioning

If malfunctioning occurs, stop using the unit immediately and consult your local JVC dealer.

The GR-A1E is designed to be used with PAL-type colour television signals. It cannot be used for playback with a television of a different standard. However, live recording and viewfinder playback are possible anywhere. Use the BN-V5GU/BN-V6GU/BN-V7GU battery packs and, to recharge them, the provided multivoltage AC power adapter/battery charger. (An appropriate conversion adapter may be necessary to accommodate different designs of AC outlets in different countries.)

VIDEO CASSETTES

- Recording onto prerecorded tapes automatically erases the previously recorded video and audio signals.
- An inverted cassette cannot be inserted.
- Do not load and unload the cassette repeatedly without allowing the tape to run at all. This will slacken the tape and thereby damage it.
- Make certain before loading the cassette that the tape is not slack. If there is any slack, turn the gear on the cassette in the direction of the arrow to take up slack.
- The cassette is equipped with a safety tab to prevent accidental erasure. When the tab is removed, recording is impossible. If you wish to record on a cassette whose tab has been removed, use adhesive tape to reseal the slot.
- To avoid excessive exposure to dust and fingerprints, do not open the front tape cover.



Storage of cassettes

- Avoid exposing the cassettes to direct sunlight. Keep them away from heaters.
- Avoid storing the cassettes in humid or dusty places.
- Do not drop the cassettes. do not expose them to violent vibrations or shocks.
- Do not expose the cassettes to strong magnetic fields (near a motor, transformer or magnet).
- Place the cassettes in cassette cases and position them vertically.

CONTENTS

Safety precautions 1
Precautions 2
Video cassettes 3
Features 4
Controls and connectors 5
Basic preparations 7
Power supply system 8
Before shooting 9
Recording operation 10
Precautions for auto-focus 11
Macro shot 11
Trigger alarm system 11
Rehearsal 11
Viewfinder monitoring 12
Remaining tape time indicator 12
Battery warning 12
Lithium battery warning 12
Power save and tape protection circuit 13
Assemble recording technique-1 13
Assemble recording technique-2 13
Assemble recording technique-3 13

Special techniques

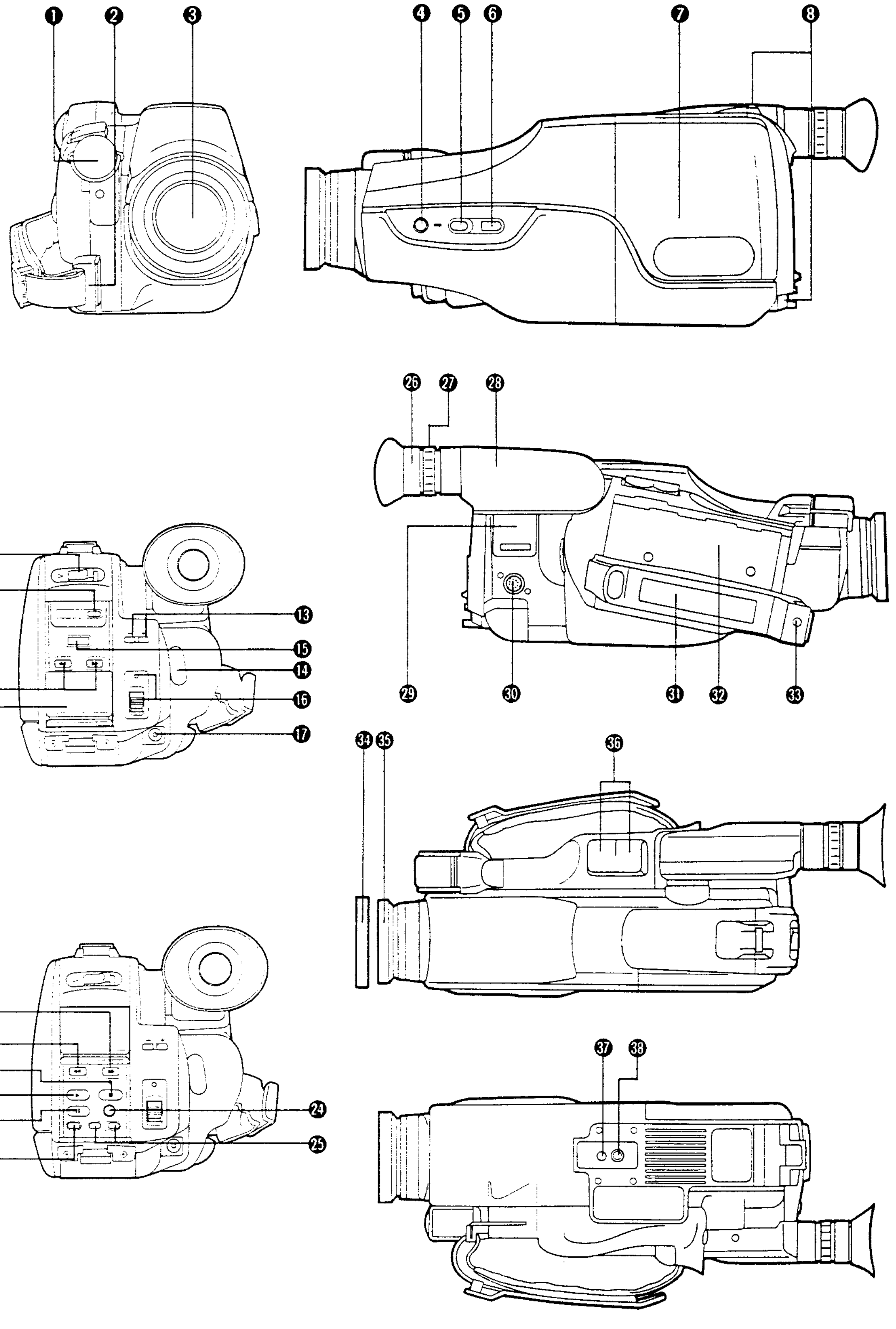
Zooming 14
Focus lock 14
High-speed electronic shutter 14
Recording the date/time/age 15
Playback 17
Connection to a television for playback 18

Tape dubbing or editing

Dubbing onto a standard recorder 19
Using the GR-A1E as a video camera 20
Charging the battery pack 21
Using the cassette adapter (provided) 22
Systems flexibility 23
Supplemental information 24
In case of difficulty 25
Specifications 26

FEATURES

- Allows direct playback with no additional components necessary.
- Ultra-compact and ultra-lightweight: a mere 1.1 kg.
- New Auto-focus system offering precise focusing from macro range to infinity.
- Flying erase head for noise-free, smooth scene transitions.
- Newly developed high-resolution 1/2" field-storage type CCD (Charge Coupled Device) pickup.
- Retake-function.
- Full-auto operation of focus, exposure, and white balance.
- Powerful, 6:1 power zoom.
- HQ (High Quality) System for superlative picture quality.
- High-sensitivity/low-lag design: allows shooting in light as low as 10 lux.
- High-speed, 1/1000-second electronic shutter for sharp, clear playback of fast-action shots.
- Automatic Colour Tracking white balance.
- Ultra-compact electronic viewfinder (monochrome CRT, 0.6-inch screen) with diopter control, also for instant on-the-spot-playback.
- Selectable automatic date recording function.
- Recordable date/time/age display.
- Remaining tape time indicator.
- Trigger alarm system for preventing recording errors.
- Shuttle Search in both directions.
- Unique grip battery doubles as palm grip, saving weight and space.
- Ergonomic design with palm grip and finger rest for trigger control.
- Three-way power supply flexibility: battery pack, AC power adapter, and car battery.



CONTROLS AND CONNECTORS

① **Exclusive microphone**
Omnidirectional condenser microphone for simultaneous sound recording.

② **Battery pack release lever**
Pull down to release the battery pack.

③ **6:1 zoom lens**
F/1.4, f = 8.5 – 51 mm. Filter diameter: 52 mm.

④ **FOCUS LOCK button**
Pressing this button cancels the Auto-focus mode and fixes the focus.

⑤ **AGE button**
Press to change the Age set/display between Age 1 (BIRTHDAY1) and Age 2 (BIRTHDAY2) modes for setting the date of birth or for displaying and recording the age of the subject.

⑥ **DISPLAY ON/OFF button**
Press this button when you do not wish to record the date/time/age. This will remove date/time/age indications from the viewfinder. Press again to record date/time/age. Date/time/age will reappear in the viewfinder.

⑦ **Cassette holder**
Insert a VHS-C video cassette for recording or playback.

⑧ **Slots for shoulder strap**

⑨ **EJECT switch**
To open the cassette holder.

⑩ **ALARM ON/OFF switch**
Switch to ON to engage the trigger alarm system. Switch to OFF when you do not wish to use this system. When the ALARM ON/OFF switch is set to ON, an electronic alarm beeps when the Recording start/stop button is pressed to begin recording. The electronic alarm beeps twice when the Recording start/stop button is pressed for record pause. This alarm helps prevent recording errors.

⑪ **RETAKE buttons**
Use these buttons to locate the point where you want to start reshooting.

⑫ **Control panel door**
Slide this cover to the "REC" position for shooting, and to the "PLAY" position for playing back.

⑬ **TRACKING buttons**
Press either button to minimize noise bars, which might be observed during playback.

⑭ **Recording start/stop button (Trigger button)**
Press this button in the Recording Standby mode to start recording. Pressing it again re-engages the Recording Standby mode.

⑮ **SHUTTER mode button**
Pressing this button switches the shutter between its 1/1000 second ("S1000") speed and 1/60 second speed.

⑯ **POWER switch**
Slide to turn the power on. The indicator will light. Slide again to switch off power.

⑰ **DC input terminal**
For connection of the provided AA-V6EG AC power adapter/battery charger, optional BH-V5E car battery charger or AP-P1E car battery cord for DC power supply.

⑱ **FF button**
Pressing this button in the Stop mode fast-forwards the tape; pressing it in the Play mode allows fast playback (three times normal spped in SP mode).

⑲ **REW button**
Pressing this button in the Stop mode rewinds the tape; pressing it in the Play mode allows fast playback in reverse (three times normal speed in SP mode).

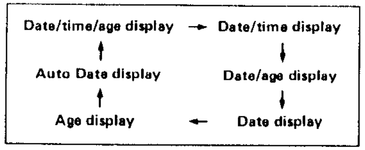
⑳ **STOP button**
Press to engage the Stop mode.

㉑ **PLAY button**
Press to start playback.

㉒ **PAUSE/MONITOR button**
Press during playback to view a still picture or to stop playback temporarily. Or, before actually recording, press this button when you wish to rehearse shots. This function allows you to view the scene in the viewfinder without recording it. Press the STOP button to release the Rehearsal mode.

㉓ **DISPLAY SELECT button**
Use to select the portion of the clock or date settings to be changed. Cycles through the day, month, year, hour, minute and age settings. To end adjustment, press once after selecting the birth date portion.

㉔ **DISPLAY MODE button**
Press this button to select the date/time/age display and recording mode. It cycles through the modes in the following order:



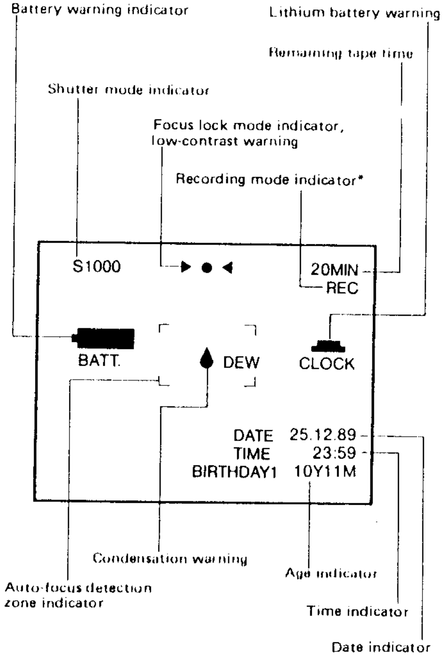
The auto-date-record function automatically displays and records the date for 5 seconds upon tuning on the power and beginning recording. Before recording begins, this mode is indicated in the viewfinder by auto date record reserve indication "AUTO DATE".

㉕ **DISPLAY SET buttons**
Use to set the built-in clock and date function.

㉖ **Eyepiece**
To clean, turn the eyepiece counterclockwise and pull to remove.

㉗ **Dioptric adjustment control**
Adjusts the viewfinder lens to suit the operator's eyesight.

㉘ **Electronic viewfinder**
For monitoring scene being shot or the playback picture after recording. Several indicators are included, as well as the date/time/age or high-speed shutter if selected.



*"CASSETTE" appears if no cassette is loaded, or if cassette with its safety tab removed is loaded.

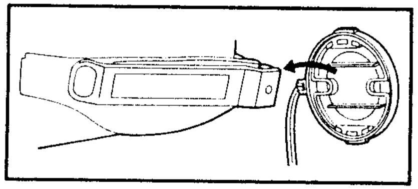
㉙ **CLOCK battery compartment**
Holds the lithium battery that powers the date/time/age display.

㉚ **AV OUT connector**
Both audio and video signals may be delivered from this connector. To dub from this unit, connect the A/V input connectors of a second recorder to this connector, using the optional A/V output cable. To play back from this unit to a TV set, make a connection between this connector and the TV's A/V input terminals using the A/V output cable.
For playback with a TV set not equipped with A/V terminals, connect the RF-V3E RF unit (optional) to this connector and to the TV.

㉛ **Grip strap**
Secures the operator's hand to the hand grip. Adjusts to fit hand size.

㉜ **Battery pack mount**

㉝ **Lens cap hook**
This keeps the lens cap from swinging during shooting.



㉞ **Lens cap**

㉟ **Lens hood**
Attach the lens cap to the lens hood when not in use. Remove the lens hood when you use the conversion lens (optional).

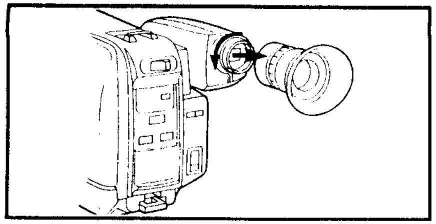
㊱ **Power zoom buttons**
For automatic zooming; press "T" for telephoto and "W" for wide-angle.

㊲ **Stud hole**

㊳ **Tripod mounting socket**

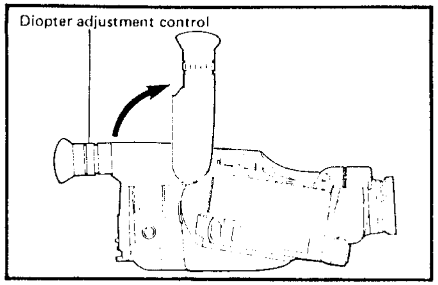
BASIC PREPARATIONS

Cleaning the viewfinder



The viewfinder eyepiece can be removed for cleaning. Turn the eyepiece counterclockwise and pull it out.

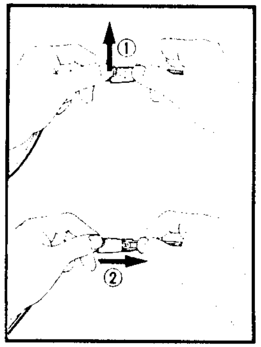
Viewfinder adjustment



- The viewfinder can be positioned for best viewability. It can be tilted up 90°.
- The viewfinder lens can be adjusted to suit the operator's eyesight by turning the diopter adjustment control.

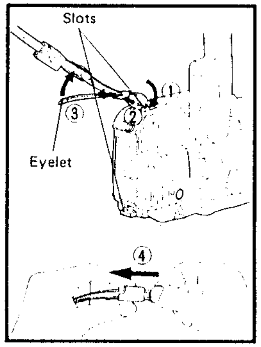
Attaching the shoulder strap

1



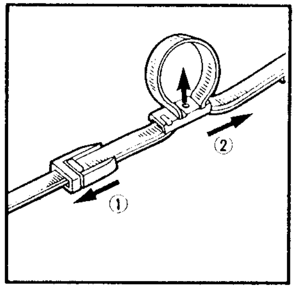
While pressing the release button down and sideway ①, slide the buckle out of the buckle shell in the direction of the arrow ②.

2



Guide the end of the strap through the slot on the GR-A1E ① and the keeper ②, and fasten the strap's eyelet on the buckle's hood ③. Then slide the buckle back, as shown, until it clicks ④.

How to adjust the length of the shoulder strap



1. While pressing the release button, slide the buckle out and pull some slack through the buckle.
2. To lengthen the strap, feed the strap from toward ①. To shorten it, feed it from ① toward ②.

POWER SUPPLY SYSTEM

The convenient 3-way power supply system gives you a choice of the most appropriate power supply unit, depending on the application.

CAUTION

- No function is available without power supply.
- Do not use any power supply other than specified.
- Never attempt to use these power supply units with any equipment other than the VideoMovie.

Where AC power is not available

Use the battery packs:

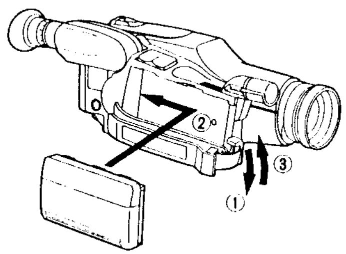
- BN-V5GU (Regular)
- BN-V6GU (High-capacity)
- BN-V7GU (Super-high-capacity)

Note:
The battery pack has been kept in the uncharged state for shipment. Therefore, before use, be sure to charge it. See page 21.

Attaching the Battery Pack

① Pull down the battery pack release lever.
② Align the battery pack over the outline in the battery pack mount, and slide the battery pack into place in the direction of the arrow.
③ Push up on the battery pack release lever, until it locks into place.

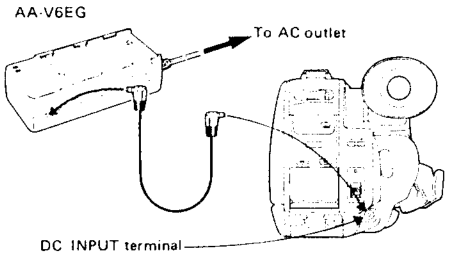
To remove the battery pack, pull down the battery pack release lever and slide out the battery.



With AC power

Use the provided AA-V6EG AC power adapter/battery charger.

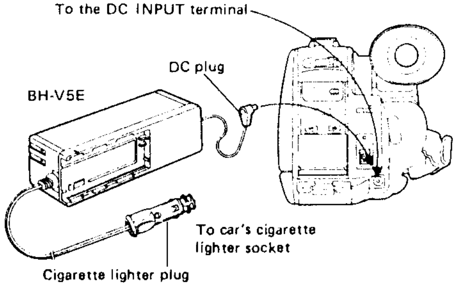
Note: This unit can be used with 110 V and 240 V power supplies. Selection is automatic and no adjustment is required.

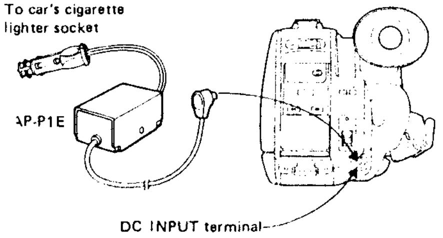


In a car

Use the optional AP-P1E car battery cord or BH-V5E car battery charger.

- Leave the car's engine idling when using the car battery. (For use with 12 V negative-grounded cars only.)

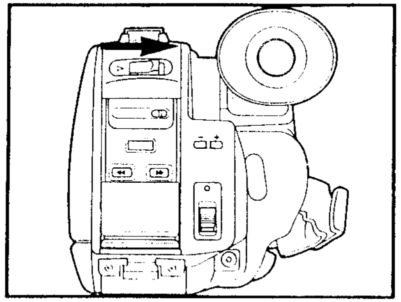




BEFORE SHOOTING

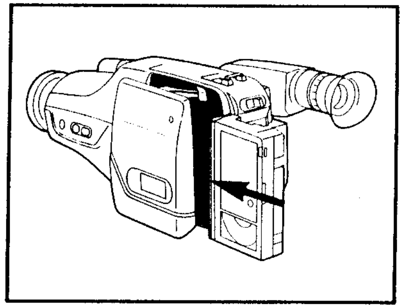
Loading a Video Cassette

1



Open the cassette holder by pressing the EJECT botton.

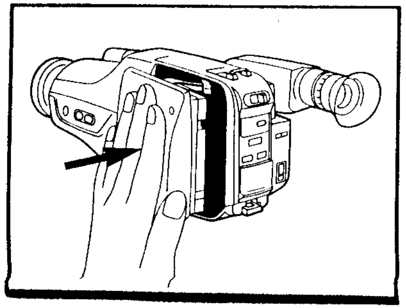
2



Insert the cassette with its printed arrow facing outward.

Ensure that tape is not slack inside the cassette, then load the cassette correctly. See page 3.

3



Close the cassette holder by pushing its center area. The tape will be automatically loaded for recording standby.

Unloading a Video Cassette

1. Press the EJECT button.
   The cassette holder will open.
2. Remove the cassette.
3. Close the cassette holder by pushing its center area.

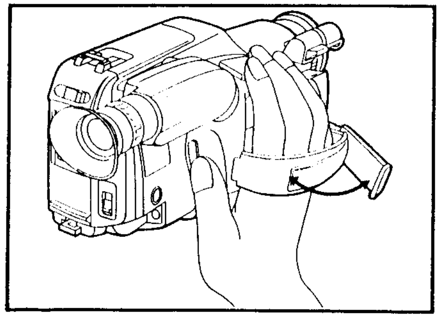
Note:

- The cassette can be ejected even when the power is off.
  The holder may not open if the battery is completely discharged.

Notes:

- Loading a cassette is possible while the power is either on or off. However, to save battery power, it is recommended that you load a cassette while the power is off. If you press the EJECT switch with the power off, the power turns on for tape loading and then off automatically. Later, when you actually begin shooting, you only have to slide the POWER switch and then the start/stop button.
- Do not repeat loading and unloading of the cassette without running the tape, as this will slacken the tape, causing tape damage.

Adjusting the Grip Strap

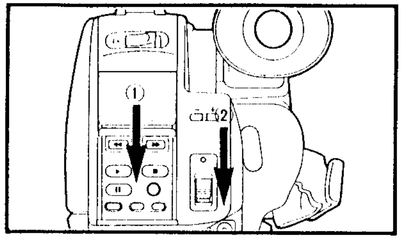


1 Separate the Velcro strip to expand the loop.

2 Pass your right hand through the loop and grasp the lens grip. Adjust the length of the strap to suit your hand size and refasten the Velcro strip.

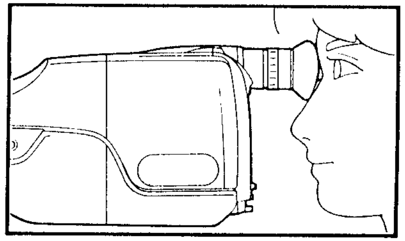
RECORDING OPERATION

1



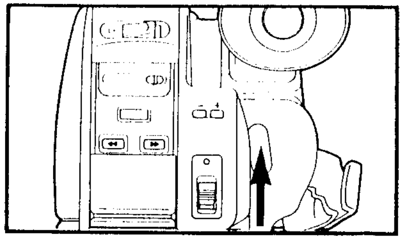
① Set the control panel cover to "REC".
② Slide the POWER switch to ON.

2



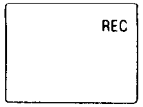
Determine the composition by referring to the viewfinder image. For zooming, see page 14.
For date/time/age recording, see page 15.
For high-speed electronic shutter, see page 14.

3

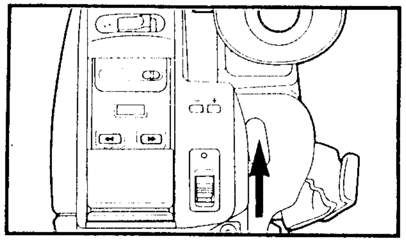


Press the start/stop button.

- This causes REC to appear on the viewfinder screen, showing that recording is actually taking place.

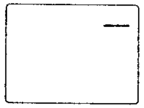


4

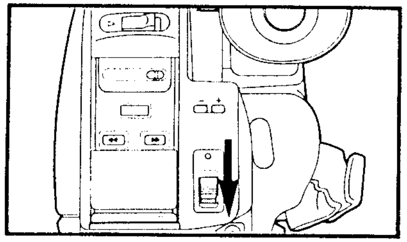


To stop recording temporarily, press the start/stop button once again.

- This causes – to appear on the viewfinder screen, showing that recording is paused.



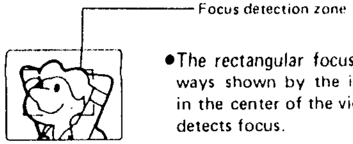
5



When you're finished shooting, slide the POWER switch to turn the power off.

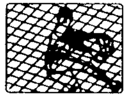
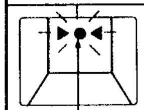
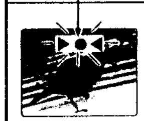
- To start recording again, slide the POWER switch on. The recording lock function ensures a smooth transition.
- If the Recording Standby mode continues for longer than about 5 minutes, the unit switches itself off automatically for tape protection. To restart recording, turn the power on.
- Repeating steps 3 and 5 produces assemble recordings.
- If recording is restarted from the Stop mode, a few frames of the previously recorded picture is replaced with a new recording. To avoid this, follow the technique described in "Assemble Recording Technique-3" on page 13.
- For worry-free shooting, it is recommended that you prepare battery packs for 3 or 4 times the length of time required for the intended recording.

Precautions for auto-focus



- The rectangular focus area, always shown by the indicators in the center of the viewfinder, detects focus.

Correct focus may not be obtained in the following situations. In such cases the focus lock should be engaged to obtain proper focus. (See page 14).

	Two subjects at different distances overlap in the same scene.
	The subject has no contrast (differences in brightness and darkness), such as a flat, one-color wall, or a clear, blue sky, for instance.
	Low-contrast warning A dark object is barely visible in the viewfinder.

Note:

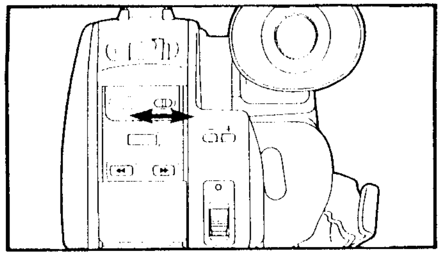
- If the lens is smeared with stains or blurred with condensation, accurate focusing is not possible. Keep it clean. If it becomes dirty, wipe with a piece of soft cloth When condensation occurs, dry it by wiping with a soft cloth or wait for conditions in which they become dry.

Macro shot

The new auto-focus system can offer continuous shooting ability from close-up to infinity. With wide angle, the subject can be right up to the front of the lens.

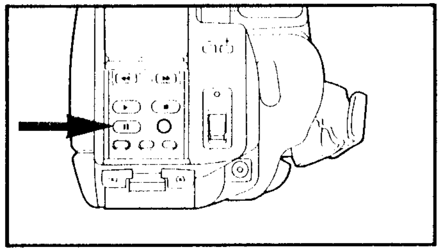
- Perform macro shooting in the Zoom-out mode. When operating in the Zoom mode, zoom automatically shifts to wide angle with the Focus Lock mode indicator blinking, and then focus adjustment is made. This process requires a few seconds.
- For best results, increase illumination when shooting in the Macro mode.

Trigger alarm system



When the ALARM switch is set to on, an electronic alarm beeps when the Recording start/stop button is pressed to begin recording.
The electronic alarm beeps twice when the Recording start/stop button is pressed for record pause. This alarm helps prevent recording errors.

Rehearsal

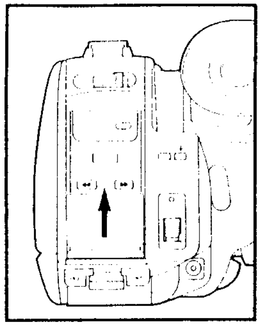


If you wish to rehearse shooting angles, compose scenes, etc., without actually recording on the tape, slide the control panel cover upward, slide the power switch on and press the PAUSE button. The scene will appear on the viewfinder screen. To disengage the Rehearsal mode, press the STOP button.

- Rehearsal is possible whether a cassette is loaded or not.
- With a cassette loaded, rehearsal is not possible during rewind or fast forward.
- The power save circuit does not function during rehearsal. (For power save function, see page 13.)

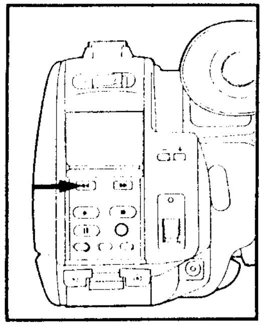
Viewfinder monitoring

1



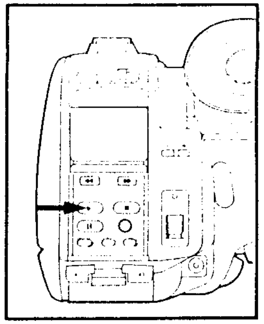
At the end of recording, slide the control panel cover up.

2



Rewind the tape to a point from which you want to check the recording.

3

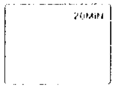


Press the PLAY button, and you can view the playback picture on the viewfinder screen.

Notes:
- Pressing the PAUSE button during playback stops the picture on the viewfinder screen.
- Shuttle search is also possible in both directions.

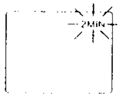
For TV playback, see page 17.

Remaining tape time indicator

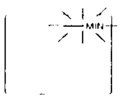


The remaining tape time is displayed in the viewfinder as shown.

20 MIN → 15 MIN → 10MIN → 5MIN
↓
4MIN
↓
— MIN ← 1MIN ← 2MIN ← 3MIN



The remaining tape time indicator will blink as a warning a few minutes before the tape is finished.

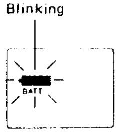


Remaining tape time is being calculated when this bar is present in the viewfinder.

- The Stop mode engages automatically when the tape has reached its end during recording.
- The indicated remaining time is approximate.
- The time required to calculate the remaining tape length and the accuracy of the calculation may vary according to the type of cassette tape.

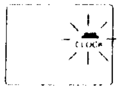
Warning

Battery warning

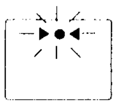


- When battery power is almost exhausted, a battery warning indication appears in the viewfinder. Replace the battery pack with a fully charged one. (See next page.)
- After this indication appears, the power turns off automatically. In this state, however, pressing the EJECT button turns the power on and ejects the cassette.

Lithium battery warning



- The lithium battery warning indicator will blink in the viewfinder if the battery is not set or when it needs to be replaced. (See page 15.)



- The low-contrast warning will blink when subject contrast is too low for accurate focusing. (See page 14.)

POWER SAVE AND TAPE PROTECTION CIRCUIT

- To save battery power, the GR-A1E (when battery-operated) switches itself off automatically in the following situations:
  (1) When left for longer than 5 minutes in the Stop mode.
  (2) When left for longer than 5 minutes in the Recording Standby (Record-Pause) mode.
- To protect the tape, the GR-A1E (regardless of whether battery-operated or AC-powered) releases tape tension slightly and switches itself off automatically if left for longer than 5 minutes in the Recording Standby (Record-Pause) mode.
- For the same reason, the GR-A1E enters the Stop mode and switches itself off automatically if left for longer than 5 minutes in the Still (Play-Pause) mode.

Battery operation

STOP → POWER OFF
5 minutes

Battery/AC operation

REC PAUSE → POWER OFF
5 minutes

PLAY PAUSE (STILL) → STOP → POWER OFF
5 minutes

ASSEMBLE RECORDING TECHNIQUE — 1 (To replace the battery pack during recording)

1 If the battery warning appears in the viewfinder while recording, stop recording by pressing the POWER switch to OFF, not the STOP button.

2 Replace the battery pack with a charged one.

3 Press the POWER switch to ON.
- The unit will be in the Recording Standby mode.

4 Press the recording start/stop button to start recording.

ASSEMBLE RECORDING TECHNIQUE — 2 (To search for the assemble point with the "Retake" function)

After reviewing a recorded segment, you may decide to re-record it immediately. The Retake function is convenient for this.

1 Make sure the camera is in the Recording Standby mode. (If not, engage the mode.)

2 Press either RETAKE button to reach the point where you wish a new recording to start. When the RETAKE button is released, the camera will enter the Recording Standby mode again.

3 Press the start/stop button to start recording.

Notes:
- Do not use the Retake function while the battery warning is blinking.
- If you use the Retake function while the battery warning (either Battery or Lithium indicator) is blinking, the indicator will extend horizontally across the veiwfinder screen.

ASSEMBLE RECORDING TECHNIQUE — 3 (To record onto a partially recorded tape)

1 Play back the tape to a point where you wish a new recording to start.
- Use the FF or REW button for faster location.
- To locate the point, press the FF or REW button during playback.

2 Press the PAUSE button at the located point.
- The unit will enter the Still mode.

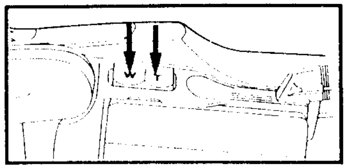
3 Slide the control panel cover downward (REC).

4 Press the recording start/stop button to start recording.

SPECIAL TECHNIQUES

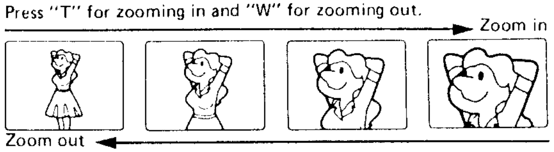
Zooming

When the focal length of the lens is varied by turning the zoom ring, the image appears to come nearer to or retreat from the viewer.



Power zooming

Press "T" for zooming in and "W" for zooming out.

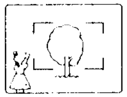


- Focusing may become unstable during the zooming-in operation. In this case, first zoom in in the Recording Standby mode then, after pressing the FOCUS LOCK button to hold the focus fixed, zoom in or out in the Record mode.
- When shooting low-contrast subjects in the Zoom-in mode, the Videomovie automatically zooms out with the Focus lock mode Indicator blinking and focus being performed.

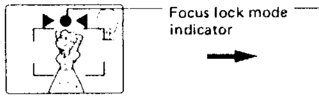
Focus lock

The GR-A1E's focus lock function is especially useful in the following situations:

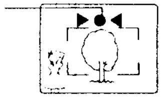
- When things are passing between your subject and the VideoMovie, make sure to engage the focus lock function, to lock your subject in focus before recording.
- If you want your main subject to appear in a corner of the screen, you should first center it at the desired distance, then use the autofocus mode for focusing, engage the focus lock function, and turn the VideoMovie till the subject is where you want it.
- Point the VideoMovie at another subject, the same distance from the camera as the one you want to record. Focus with the autofocus function and engage the focus lock mode. Now turn back to your desired subject and record it. When the low-contrast warning blinks, it means that accurate focus cannot be achieved.



The center of the viewfinder is focused in the Auto focus mode.



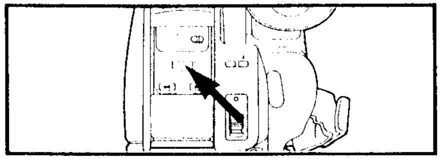
Press the FOCUS LOCK button, the indicator will blink in the viewfinder. Then aim the GR-A1E so that the subject is centered in the viewfinder.



Return to the original composition. The subject will remain in focus even though it is no longer in the center of the viewfinder.

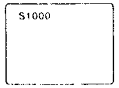
High-speed electronic shutter

The GR-A1E is equipped with a high-speed electronic shutter that allows better recording of quick movements for sharp, clear stills or slow-motion playback. Select this when taping fast-action shots that you will want to play back later in the still or slow-motion mode using a video recorder with these modes.



1 Press the SHUTTER button to switch to the 1/1000 second electronic shutter. This can be done while recording or in any other mode. It continues until switched to standard speed.

2 When finished recording the fast-action scene, switch back to the standard shutter speed by pressing the SHUTTER button.



When selected, the High-Speed Shutter mode is indicated on the viewfinder screen.

Notes:
- The High-Speed Shutter mode requires slightly more subject illumination than the Standard Shutter mode. Therefore, the low-light warning may blink in the viewfinder. *If so, switch to the Standard* Shutter mode.
- Picture colour may be adversely affected in the high speed shutter mode when the subject is lit by alternating discharge-type light sources such as fluorescent or mercury-vapor lights.

RECORDING THE DATE/TIME/AGE

Warning on lithium battery
- Dispose of used battery promptly.
- Keep away from children.
- Do not disassemble and do not dispose of in fire.

Battery insertion

- Switch off the unit's power before inserting the battery.

This battery powers the date/time function.

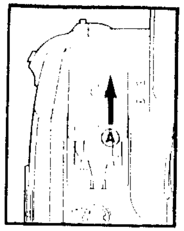
1. Slide the cover off the CLOCK battery compartment on the right side of the VideoMovie by pressing lightly on the section labelled Ⓐ in the diagram.
2. Insert the provided lithium battery with the plus (+) side up.
3. Slide the cover on unit until it clicks.

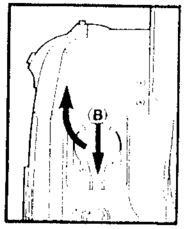
Battery replacement

The battery lasts for about one year. When the lithium battery warning (CLOCK) appears in the viewfinder, this battery needs to be replaced.

Replace the CR2025 lithium battery as follows:

1. Remove the battery by pressing lightly on the section labelled Ⓑ of the lithium battery in the diagram.
2. Insert the new CR2025 with the plug (+) side up.
3. Slide the cover back until it clicks.



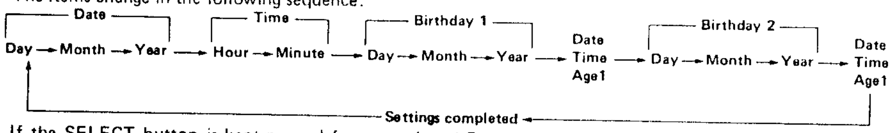


Notes:
- Switch off the unit's power before removing old battery.
- Replace battery with Panasonic (Matsushita) type CR2025 only. Use of another battery may present risk of fire and explosion.

Setting the Date/Time/Birthday

Before setting the Date, Time and "Birthday" for first time or after replacing the batteries, be sure to set the clock to the correct time.

1. Switch the unit's power on. Press the PAUSE/MONITOR button to engage the Rehearsal mode.
2. Press the SELECT button: the "day" position blinks.
3. Press either SET (-/+) button to call up the current day. The "+" button calls up correct numbers in forward order, the "-" button in reverse order.
4. Press the SELECT button to change to the next item. The called up item will blink. Then, press either SET (-/+) button to call up the appropriate setting.
   The items change in the following sequence:



   If the SELECT button is kept pressed for more than 1.5 seconds, this will call up items rapidly for setting, and stop at the item where the button is released.
5. Procedures in steps 4 allow you to set Date and Time. After the Time has been set proceed to the Birthday setting.
   Setting the "Birthday"
   The GR-A1E is provided with a "Birthday" memory function so that once someone's date of birth is entered in memory, the unit displays and records his or her age, automatically calculated and expressed in "xxY (years) xxM (months)" on the scenes. The Birthday memory accommodates 2 different settings.
6. After the Time has been set, press the SELECT button. The Day position blinks of "BIRTHDAY1". Make the settings for the items of BIRTHDAY1, and then "BIRTHDAY2" as described in step 4 above.
7. After all items have been set, press the SELECT button, and blinking will stop. The Date, Time and Age will be displayed.

Notes:
- When the Date/Time/Birthday is set for the first time, after inputting the ,"BIRTHDAY 1" data, the Date, Time and Age 1 (automatically calculated based on the BIRTHDAY 1 data) appear. However BIRTHDAY 2 data is set, "Age 1" together with the Date and Time data will still appear after it.
- It is recommended that you set both BIRTHDAY 1 and BIRTHDAY 2 at the same time.
- When the data is changed, the selected item blinks. But if it is left for 5 minutes, it stops blinking, and the selected item remains unchanged.
- The clock begins timekeeping when the minute portion stops blinking and remains constantly lit. While the Date and Time are blinking, the clock does not keep time. Be sure to conform the correct time when setting the Birthday.

Recording the Date/Time/Age

1. The Date/Time/Age can be displayed and recorded in various combinations. Press the DISPLAY MODE button to cycle through the modes in the following order:

   → Date/time/age → Date/time → Date/age → Date → Age → Auto Date ┘

2. When the Age is being displayed, pressing the AGE button calls up "Age 1" (corresponding to BIRTHDAY1 setting) and "Age 2" (BIRTHDAY2). Each time this button is pressed, you switch from one Age mode to the other.
3. In the Recording Standby mode, when "AUTO DATE" is displayed in the viewfinder, the date will be automatically displayed and recorded for five seconds at the beginning of each recording.
4. Press the DISPLAY ON/OFF button when you do not wish to record the Date/Time/Age. This will remove these items from the viewfinder. Press again to restore the Date/Time/Age in the viewfinder for recording.

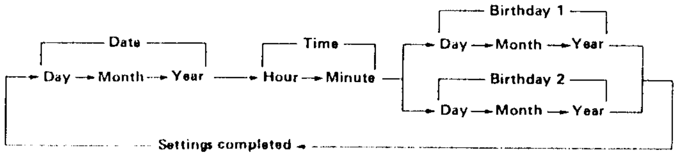
Notes:
- When Age 1 and 2 are displayed, the words "BIRTHDAY1" or "BIRTHDAY2" does not appear in the viewfinder, and neither is recorded.
- It is not possible to display both Age 1 and Age 2 at the same time.

Date/Time/Age Recording Indications

Date/time/age display	Date/time display	Date/age display	Date display	Age display	Auto date display
25 12 89 23 59 10Y11M	25 12 89 23 59	25 12 89 10Y11M	25 12 89	10Y11M	AUTO DATE Auto date record reserved

Resetting the Date/Time/Birthday

1. Press the DISPLAY MODE button to call up the item you with to reset.
   - If you reset Birthday, press the AGE button to call up either Age 1 (BIRTHDAY1) or Age 2 (BIRTHDAY2).
2. Press the SELECT button to call up the item to be reset. The called up item will blink.



3. Press either SET (-/+) button to make the new setting.
4. When all necessary items are reset, press the SELECT button. The display is restored to the mode called up in step 1.

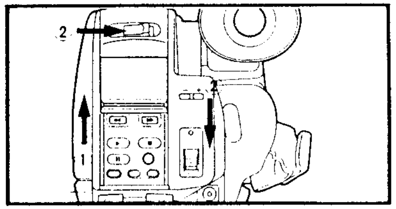
Notes:
- In step 1 above, if you wish to reset the other Birthday, repeat the steps above. It is not possible to reset both Birthdays at the same time.
- When the data is changed, the selected item blinks. But if it is left for 5 minutes, it stops blinking, and the selected item remains unchanged.

PLAYBACK

The GR-A1E permits playback of recorded VHS-C video cassettes.
For connections refer to pages 18 and 19.

Preparations
- With a television equipped with audio/video input connectors, set the television's TV/VIDEO switch to VIDEO.
- With a regular television receiver, set the aerial select switch of the RF-V3E (optional) RF unit to VIDEO and the TV receiver's channel selector to your video channel.
- Connect a power supply unit. (Battery or AC operation: see page 8.)

1

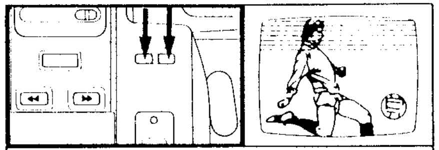


① Set the control panel cover to "play".
② Slide the POWER siwtch to on and then press the EJECT switch.

2 Insert a pre-recorded cassette.

Ensure that tape is not slack inside the cassette, then load the cassette correctly. See page 3.

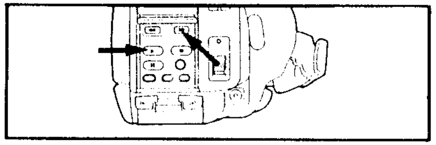
3 Press the PLAY button. Playback will start.



Tracking Adjustment
Noise bars might appear on the screen if you playback a tape which was recorded on another recorder. For correction, press either TRACKING (-/+) button. Tracking is reset to the preset standard each time a cassette is ejected or to press the TRACKING (-/+) button simultaneously.

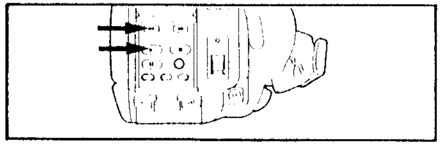
Shuttle Search

Fast-speed playback in the forward direction



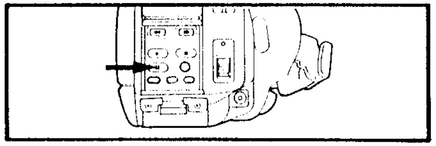
Press the FF button in the Play mode. Playback will be speeded up to 3 times normal speed.

Fast-speed reverse playback



Press the REW button in the play mode. The tape will be played back in the reverse direction at 3 times normal speed.

Still playback



Press the PAUSE/MONITOR button during playback.
The picture will stop on the screen.
- *After about 5 minutes of still playback, the unit* enters the Stop mode automatically for tape protection and switches itself off.

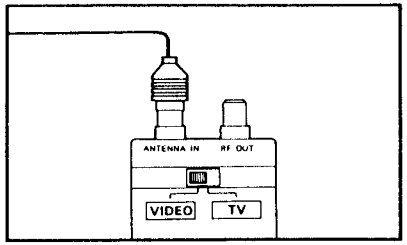
Notes:
- For brief scanning, keep the Shuttle Search button pressed for more than 2 seconds; when you release the button, the Search mode will be cancelled.
- Noise may appear on the screen during Shuttle Search and still playback. This is not due to any defect of the unit.
- Pictures may become monochrome during Shuttle Search mode. This is not due to any defect of the unit.

CONNECTION TO A TELEVISION FOR PLAYBACK

The GR-A1E includes playback circuits and allows playback of pre-recorded cassettes simply by connecting to a television set.

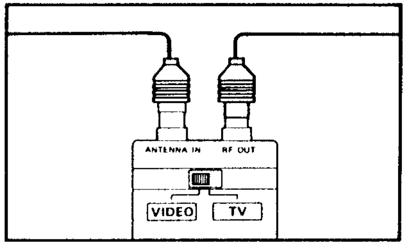
1 Remove the aerial cable from the TV receiver.

2



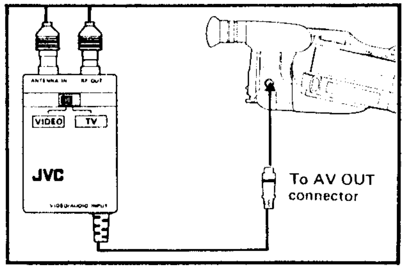
Connect the aerial cable to the ANTENNA IN terminal of the RF unit.

3



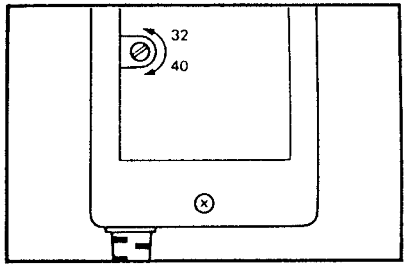
Connect the RF OUT terminal of the RF unit to the aerial terminal of the TV receiver using the aerial cable.

4



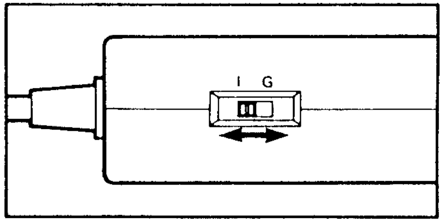
Connect the VIDEO/AUDIO INPUT cable of the RF unit to the AV OUT connector of the GR-A1E.

5

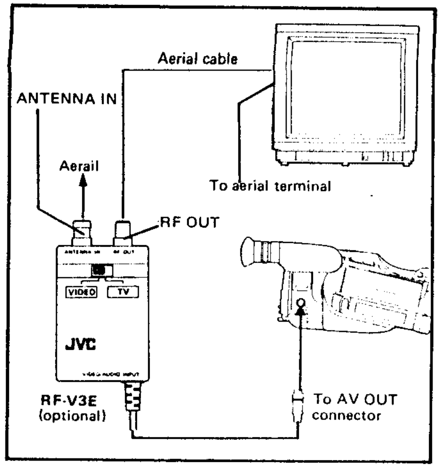


Adjust the RF converter output channel according to your VIDEO CHANNEL.

- **RF converter channel adjustment screw**
  The RF unit permits playback of video and audio recordings through a TV receiver. The signals from the RF unit are viewed through a vacant channel not used for broadcasting in your area. The output frequency of the RF converter has been set to correspond to a broadcast on UHF channel 36. To view playback pictures from the GR-A1E with your TV receiver, tune its specified AV channel to UHF channel 36. If channel 36 is employed for broadcasting in your area, readjust the RF converter output channel to one of the vacant channels between 32 and 40. To make this adjustment, remove the small cap on the back of the RF unit and turn the adjustment screw with a screwdriver to tune in a vacant channel.



- **TV system select switch (I/G)**
  When you use a TV receiver built to the British PAL standard, shift the system select switch to "I".



●RF converter channel adjusting procedure

1. Set the AV channel of the TV receiver to one of the vacant channels.
2. Power the GR-A1E.
3. Put the GR-A1E in the Rehearsal mode (see page 11).
4. Set the VIDEO/TV switch of the RF unit to VIDEO.
5. While monitoring the output signal on the TV screen, turn the RF converter channel adjustment screw so that the monitored picture comes in most clearly.

●When you wish to view video cassette programmes, always select the AV channel on the TV receiver which has been tuned to the output frequency of the RF converter.

PRECAUTIONS FOR RF-V3E (Optional)

●For exclusive use with the GR-A1E VideoMovie.
●Do not disassemble or remodel the RF-V3E.
●Do not expose it to strong shocks.
●Unplug the connected equipment during lightning storms. (Never touch the aerial cable.)

CAUTION:

To view the GR-A1E recordings with a TV receiver, use a TV receiver having a specified AV channel and employ this AV channel as your VIDEO CHANNEL, otherwise playback may be disturbed with vibrating or bending pictures. AV channels refer to channels exclusively for video playback; because of AFC circuits applied to these channels, the playback pictures can be stabilised. Recent TV receivers have one or more AV channels.

OPERATION

Viewing video cassettes being played back with the GR-A1E

To view video cassettes or to monitor the recording, set the VIDEO/TV switch of the RF unit to VIDEO and the TV channel selector to the channel corresponding to the RF output channel.

Viewing television programmes

Set the VIDEO/TV switch to TV, and the TV receiver will function as usual.

TAPE DUBBING OR EDITING

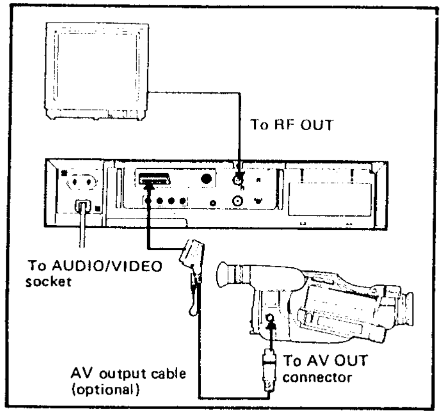
Dubbing onto a standard recorder

Connection

1. Connect the AV OUT connector of the GR-A1E to the AUDIO and VIDEO IN connectors of the video recorder using the optional AV output cable or a suitable dubbing cable.
2. Connect a television to the video recorder to monitor the picture while dubbing.

Operation

●Put the GR-A1E in the Play mode and the connected recorder in the Record mode to copy the recording. To edit out unwanted material, press the recorder's PAUSE button.

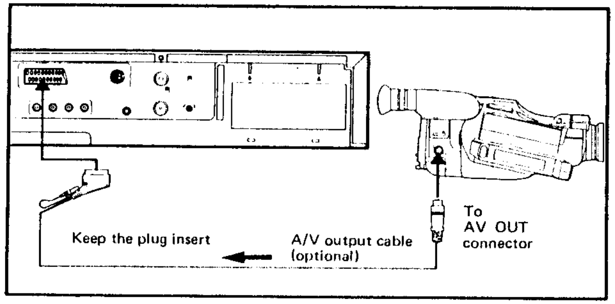


USING THE GR-A1E AS A VIDEO CAMERA

For continuous documentation of longer events, the GR-A1E can be used as an independent video camera in combination with either a deck-type or portable video recorder.

Using a recorder not equipped with a 10-pin camera connector

- Connect the AV OUT connector of the GR-A1E to the AUDIO and VIDEO IN connectors of the video recorder using a suitable dubbing cable.



Operation

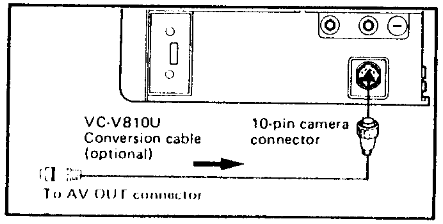
1. Press the PAUSE/MONITOR buttons. The camera output signal is now avialable via the dubbing cable.
2. Put the connected recorder in the Record mode. Recording will start. Tape start/stop should be controlled with the recorder's buttons.

Note:

- In this configuration, it is possible to obtain a continuous recording and an edited-out recording of the same event simultaneously, because the GR-A1E's start/stop button only controls the tape inside itself while another tape loaded in the connected recorder continues running. To record on the GR-A1E's tape, follow the same recording procedure as mentioned before: set the control panel cover to REC and then press the start/stop button.

Using a recorder equipped with a 10-pin camera connector

- Connect the AV OUT connector fo the GR-A1E to the 10-pin camera connector of the JVC recorder using the optional VC-V810U conversion cable.



Operation

1. Press the PAUSE button.
2. Put the connected recorder in the Recording Standby (Record-Pause) mode.
   ●The viewfinder's mode indication corresponds to the state of the connected recorder.
3. Press the start/stop button of the GR-A1E to start recording.

Note:

- To record on the GR-A1E's tape as well, press VideoMovie's start/stop button.

Precautions

- Power is not supplied to the GR-A1E from the connected VCR. Independent power supply is required for both the GR-A1E and the VCR.
- If you stop recording by pressing the GR-A1E's start/stop button, the connected VCR also stops in the Pause mode. However, the pause command signal is not delivered to the connected VCR in the following cases and, therefore, the VCR will start automatically:
  (1) when the GR-A1E is switched off or its battery becomes discharged.
  (2) when the VC-V810U cable is disconnected.
  Therefore, before replacing the battery or tape for the GR-A1E, put the connected VCR either in the STOP or REC LOCK mode.

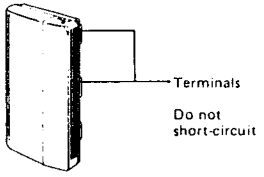
CHARGING THE BATTERY PACK

To charge the battery pack, use the exclusive AC power adapter/battery charger AA-V6EG (provided/optional) or car battery charger BH-V5E (optional).

Note:
The AA-V6EG AC Power adapter/battery charger will accept 110 V and 240 V power supplies. Selection is automatic and no adjustment is required.

A WORD ON THE EXCLUSIVE BN-V5GU/V6GU/V7GU BATTERY PACKS

The BN-V5GU/V6GU/V7GU are nickel-cadmium batteries. Give attention to the following to make the most of their characteristics.



Temperature ranges:
The recharging time is based on room temperature of 20°C.
The lower the temperature, the longer the recharging time.
For charging: 10°C to 35°C
For operating: 0°C to 40°C
For storing: −10°C to 30°C

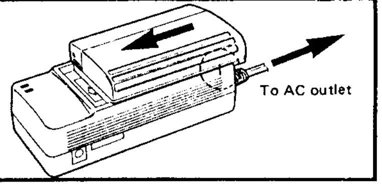
The battery pack has been kept in the uncharged state for shipment. Therefore, before use, charge it.
BE SURE TO CAREFULLY READ THE CAUTION ATTACHED TO THE BATTERY PACK.

Charging procedure

Charging time

BN-V5GU 50 min.	BN-V6GU 70 min.
BN-V7GU 80 min.	

- The charging time differs depending on the ambient temperature and the condition of the battery pack.



Connect the AC power cord to a wall outlet.
(The POWER indicator will light.)

Align the marks on the battery pack and adapter.

Slide the battery pack in the direction of the arrow until it locks in place.

When charging is completed, the CHARGE indicator that is red turns to green.

PRECAUTIONS
- If used near a radio, the provided AA-V6EG AC power adapter/battery charger may interfere with reception.
- Prevent inflammables, water and metallic objects from entering the unit.
- Do not disassemble or modify the unit.
- Do not apply shocks to the unit.
- Do not subject the unit to direct sunlight.
- Avoid using the unit in extremely hot or humid places.
- Avoid using the unit in places subject to vibrations.

Note:
The optional BH-V5E Car Battery Charger can charge the batteries from a car battery. For details refer to the instructions of the BH-V5E.

Recording time for the GR-A1E

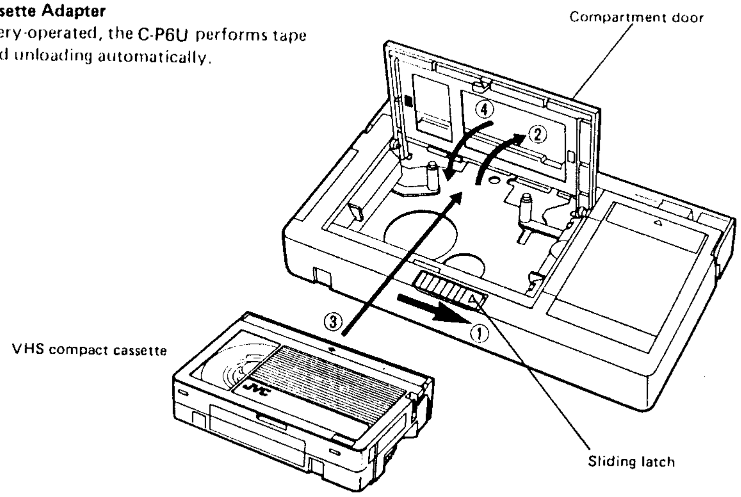
BN-V5GU 25 min.	BN-V6GU 60 min.
BN-V7GU 80 min.	

- The recording time per charge is influenced by the duration of recording standby, frequency of zooming, etc. It is safer to have spare battery packs.

USING THE CASSETTE ADAPTER (provided)

The VHS compact video cassettes recorded with the GR-A1E can be played back with a standard VHS machine by using the provided C-P6U Cassette Adapter.
(A compact video cassette installed in the cassette adapter is fully compatible with a standard VHS machine for both recording and playback.)

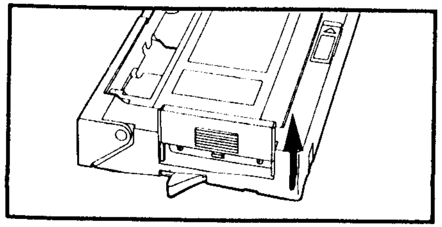
●C-P6U Cassette Adapter
Being battery-operated, the C-P6U performs tape loading and unloading automatically.



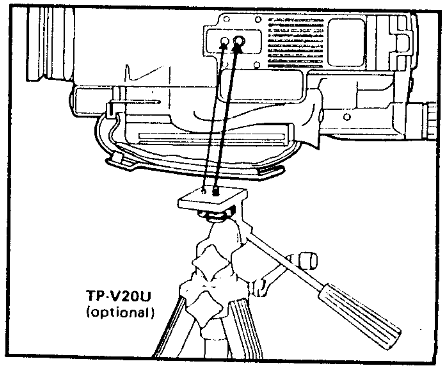
Note:
- During special-effects playback (slow motion, still frame, etc.) the picture may vibrate or noise bars may appear on the screen.

Inserting the battery into the cassette adapter

Remove the battery cover by sliding it up.
Install one "R6" battery and reattach the cover.



TRIPOD MOUNTING

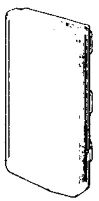


Align the screw and camera direction stud of the tripod with the camera's tripod mounting socket and stud hole, and firmly tighten the screw.

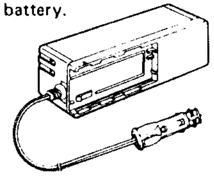
SYSTEMS FLEXIBILITY

For maximum enjoyment, make the most of the provided or optional accessories depending on the situation.

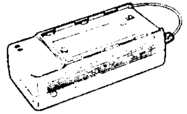
- **Regular battery pack BN-V5GU**
  Page 8
- **High-capacity battery pack BN-V6GU**
  Page 8
- **Super-high-capacity battery pack BN-V7GU**
  Page 8



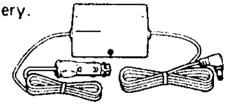
- **Car battery charger BH-V5E**
  Page 8 and 21
  Use to charge the battery pack, or power the GR-A1E using a car battery.



- **AC power adapter/battery charger AA-V6EG**
  Pages 8 and 21
  Use to power the GR-A1E with household AC current or to charge the battery pack.

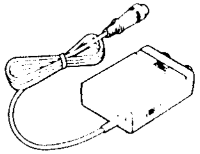


- **Car battery cord AP-P1E**
  Page 8
  For power supply from a car battery.

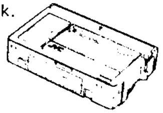


- **Active Jacket CB-V305U**

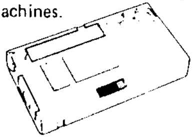
- **RF unit RF-V3E**
  Pagrs 18
  Use to connect the GR-A1E to a regular TV receiver for playback.



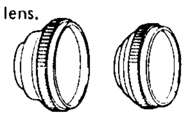
- **Compact video cassette EC-30**
  Page 3
  Allows 30 minutes of recording and playback.



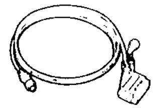
- **Cassette adapter C-P6U**
  Page 22
  Enables the EC-30 compact video cassette to be used with regular VHS machines.



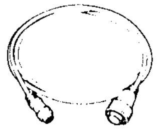
- **Conversion lens kit GL-V157U**
  For a change of perspective attach the 1.5X teleconversion lens to boost the Telephoto power 1.5 times or reduce the Wide-Angle coverage by an equivalent amount (0.7 times). Remove the lens hood when you use the conversion lens.



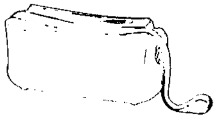
- **AV output cable VC-V8961SE**
  Pages 19 and 20
  Use to connect the GR-A1E to a television set equipped with audio/video input connectors for playback, or to a second video recorder for dubbing.



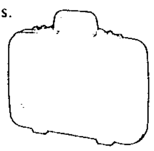
- **Conversion cable VC-V810U**
  Page 20
  For connecting the GR-A1E to a VCR with a 10-pin camera connector



- **Carrying bag CB-V25U**
  Use to carry GR-A1E together with basic accessories.

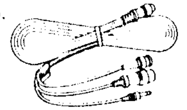


- **Carrying case CB-V35U**
  Use to carry GR-A1E together with accessories.

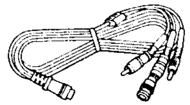


AV output cables
For connecting VCRs which do not accept the VC-V8961SE, these cables are also avialable optionally.

- **AV output cable VC-V856E**
  With BNC connector for video and 5-pin DIN connector for audio.



- **AV output cable VC-V826E**
  With BNC connector/RCA phono jack for video and RCA phono jacks for audio.



Choose the appropriate cable depending on the type of VCR you have.

SUPPLEMENTAL INFORMATION

What is "colour temperature"?

Light is composed of various colour components in different proportions. A relationship exists between the temperature of a light source and the colour components of the emitted light; as the temperature rises, the colour of the light varies from red, orange, yellow, white to blue in that order. "Colour temperature" is a value that expresses differences in colour among light sources, measured in Kelvin degrees. Bluish light has a higher colour temperature than reddish light.

What is "white balance"?

Making the colours look natural on TV is what white balance is all about. Because a camera is not as adaptable as the human eye, if a light source is reddish, white subjects in that light are recorded as reddish. White balance adjustment is performed to compensate for colour temperature variations of light so that whites are reproduced as white. Correct white balance makes all other colours correct. The GR-A1E can perform automatic white balance adjustment. However, if illumination is insufficient, white balance adjustment cannot be performed. To obtain correct colours, therefore, sufficient illumination is essential.

What is "illuminance"?

"Illuminance" (also called 'luminance') is the intensity or brightness of light, expressed in lux. The GR-A1E is designed to provide best pictures under the conditions of a 700-lux illuminance, although shooting is possible all the away down to 10 lux. To obtain good pictures in very bright light, the use of an ND (neutral density) filter is recommended. (See chart on this page.)

How to get good colour pictures

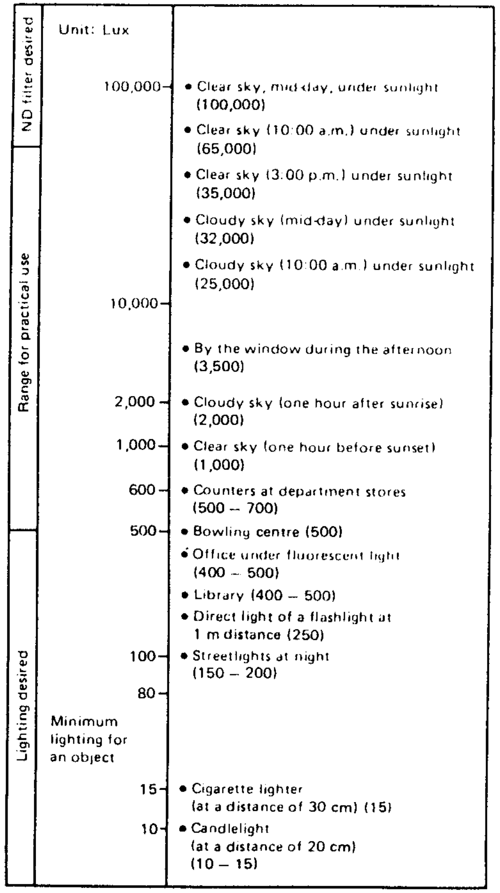
The simplest way is to provide sufficient lighting (close to the camera's reference illuminance) and accurately adjust the camera to the colour temperature of that lighting. If light sources of different colour temperatures are used together, accurate white balance adjustment is very difficult. For example, if natural light is mixed with artificial light, which is likely to occur next to windows, correct colours of the subject are difficult to obtain. It is recommended in such cases that curtains in the room be closed to shut out light from outside. Also, when artificial lighting devices are used, they should all have the same colour temperature. For example, it is recommended that incandescent or halogen lamps not be used together with fluorescent lighting.

Colour temperatures of various artificial lighting

Type of illumination		Colour temperature
Tungsten lamp for home use		2800 K
Tungsten lamp for photographic use		3200 K
Quartz-halogen lamp		
Blue lamp for photographic use		5000 K
Fluorescent lamp	Warm white	3500 K
	White	4500 K
	Daylight type	6500 K

Illuminance chart

- The values on this chart are approximated to give you a rough reference.



IN CASE OF DIFFICULTY

What may initially appear to be trouble is not always a real problem. Make sure first . . . .

Symptoms	Check points
Power	
No power is supplied	●Is the battery pack correctly installed? ●Is the battery pack charged? ●Is the power supply unit correctly connected? ●Is the POWER switch of the connected AC adapter set to ON?
Recording	
Recording is impossible.	●Check to see if the cassette safety tab is in place. See page 3. ●Is the camera control panel cover all the way down?
Playback	
Tape is running, but no playback picture appears.	●Is the TV/VIDEO switch of the RF unit set to VIDEO? ●Is the TV receiver set to your video channel? ●If A/V connection is used, is the TV's VIDEO/TV switch set to VIDEO?
Noise bars appear in the playback picture.	●Use the TRACKING buttons to reduce noise bars.
Playback picture is blurred or interrupted while TV programs received are clear.	●Video heads may be dirty or worn out. For head cleaning or replacement, consult the nearest JVC Service Dealer.
Tape transport	
Rewinding or fast forwarding is impossible.	●Check to see if the tape has already been fully wound on one reel or the other.
Other	
Vertical white lines appear when shooting a very bright object.	●This may occur when the background contrasts very much with the object. This is normal.

The GR-A1E is a microcomputer-controlled device.External noise and interference might prevent it from functioning properly. In such cases, first disconnect its power supply unit (battery pack, AC power adapter, lithium battery, etc.); and then reconnect it and proceed as usual from the beginning.

SECTION 1
SERVICE CAUTION AND DISASSEMBLY

1.1 PRECAUTIONS

1. Disconnect unit from power before removing or soldering components.
2. When removing a fastener (screw, washer, etc.), be careful not to drop it into the mechanism. If a fastener should be dropped, be sure to retrieve it before operation.
3. When removing a connector, pay special attention to flexible wires and wiring so as not to damage them.
4. Some resistors, shorting jumpers (0 ohm resistance), ceramic capacitors and diodes are chip parts. These chip parts cannot be reused after they are once removed. Refer to Section 1.3.
5. Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available. Especially, when the VR of the camera portion is adjusted, all VRs may require adjustment.
6. When removing and replacing parts, be careful not to damage or displace other parts. (Be especially careful with the video head assy and the tape transport mechanism.)
7. Pay special attention to the CCD image sensor and optical filter so that they won't be dusty, soiled or damaged. If it is soiled with fingerprints, etc., clean gently with silicon lens tissue or chamois.
8. When removing and replacing ICs, be careful not to damage circuit patterns.

1.2 REQUIRED TEST EQUIPMENT FIXTURES/TOOLS AND OTHERS

For proper measurement, adjustment and maintenance, the following test equipment, fixtures/tools are strongly recommended.

1.2.1 Test equipments

1. Oscilloscope (dual-trace, more than 20 MHz)
2. Vectorscope
3. Frequency counter
4. Audio tester and Audio signal generator
5. Color video monitor
6. Halogen lamps
7. Video signal generator
8. Sweep signal generator

1.2.2 Tools

1. 1.5 mm hexagonal wrench.
2. Fine tipped, well insulated soldering "pencil" (with absorbent) : Temp 130°C –260°C.

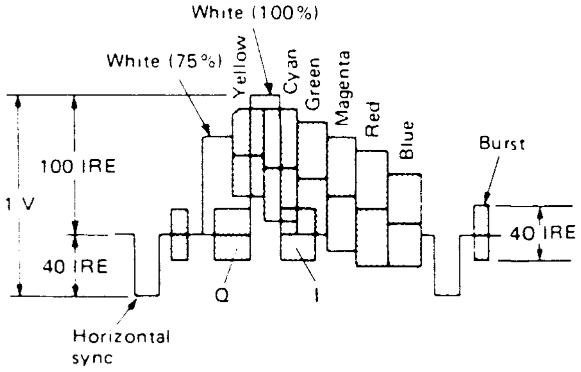


Fig. 1-2-1 Color bar signal waveform

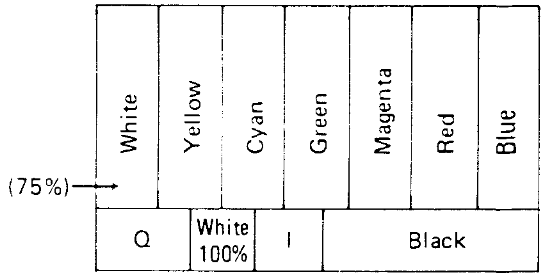


Fig. 1-2-2 Color bar pattern

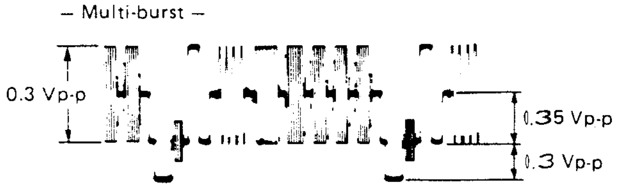


Fig. 1-2-3 Input signal level for multi-burst

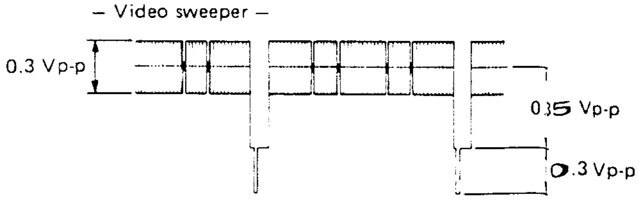


Fig. 1-2-4 Input signal level for video sweeper

1.2.3 Special test equipment and tolls required for adjustments

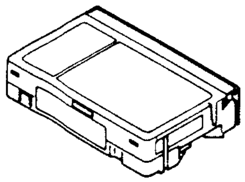
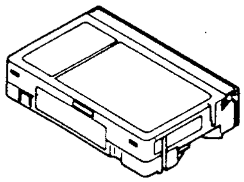
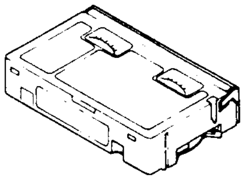
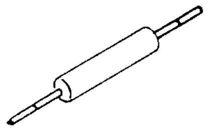
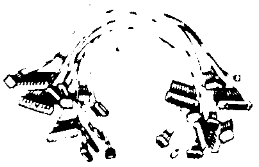
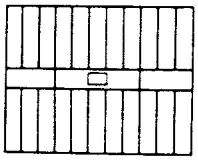
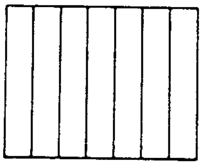
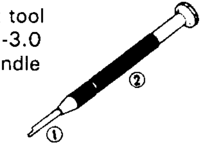
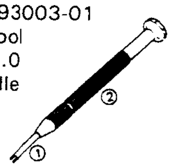
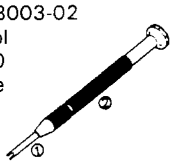
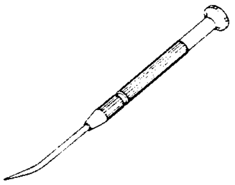
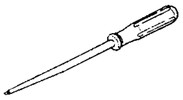
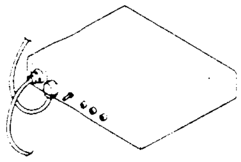
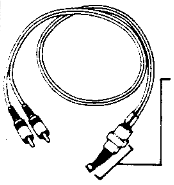
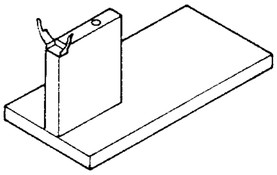
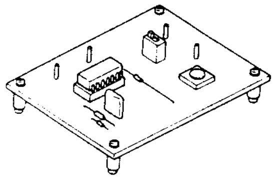
Alighment tape for SP interchangeability MHPE-C or MH-C2	Alignment tape for SP PB Y/C level MHVE-2C or MH-C2	Cassette torque meter PUJ50431-2	Adjusting tool for compact VTR YTU93004-2
			
Patch cord set YTU93029A	Gray scale pattern Reflection type, 11 steps, $\gamma = 2.2$ GS-2A	Color bar pattern Reflection type, 7 colors CC-2A	A/C head positioning tool YTU93002A (incl. ① & ②)
			① YTU93002-01 Bit tool ② PD-3.0 Handle  Orders for ① and ② can be placed separately.
Chip parts replacing tool YTU93003A (incl. ① & ②)	Chip parts replacing tool YTU93003B (incl. ① & ②)	Chip IC replacing tool PTS40844	Screwdriver with nonmagnetic 0.35 mm bit YTU94028
① YTU93003-01 Bit tool ② PD-3.0 Handle  Orders for ① and ② can be placed separately.	① YTU93003-02 Bit tool ② PD-3.0 Handle  Orders for ① and ② can be placed separately.		 (ENGINEER DA-08)
Y/C separator PUJ25579-2	Cable for Y/C separator YTU93006	Camera stand YTU93030A	AF adjusting tool YTU93020-2
	 To be replaced with the patch cord YTU93029-21 for Y/C separator cable		

Table 1-2-1 Fixtures

1.2.4 Main screws for disassembly

The shapes and part numbers of screws are shown below. Refer to them during assembling/disassembling processes.

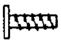
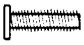
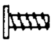
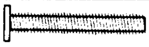
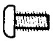
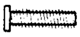
Name	Shape	Part No.
Screw Ⓐ		YQM30032-4-2
Screw Ⓑ		YQM30032-1-2
Screw Ⓒ		YQM30032-16-2
Screw Ⓓ		YQM30032-2-2
Screw Ⓔ		YQM30032-3-2
Screw Ⓕ		YQM30032-34
Screw Ⓖ		SPSP2004Z
Screw Ⓗ		SPSK1780M
Screw Ⓘ		SPSH1725M
Screw Ⓙ		SPSH1730M
Screw Ⓚ		PQ41450-2
Screw Ⓛ		SPSK1730M
Screw Ⓜ		SPSH1720M

Table 1-2-2 Main screws

1.3 REPLACEMENT OF CHIP PARTS

For replacing chip parts, proceed it as follows.
Use a well insulated fine-tipped soldering iron (approx. 17 W, 130°C ~ 260°C in temp.).
In addition, it is recommended to use a soldering iron (55 W approx.) with solder absorber for convenience.

Caution:
- Do not apply heat for more than 3 seconds.
- Do not rub electrodes.
- Do not reuse chips removed once. Discard them.
- Supplementary cementing is not required.

1.3.1 Soldered condition of chip parts

- Resistors, capacitors, etc.

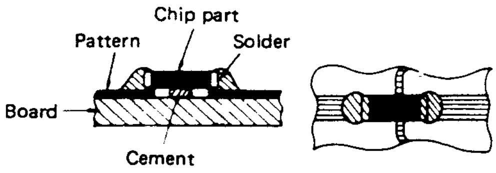


Fig. 1-3-1 Soldering condition-1

- Transistors, diodes, etc.

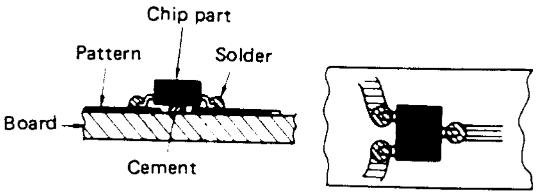


Fig. 1-3-2 Soldering condition-2

1.3.2 How to remove chip parts

- Resistors, capacitors, etc.

1. Set a chip parts replacing tool onto the chip parts to hold it down.
2. Unsolder at a side of the chip parts.

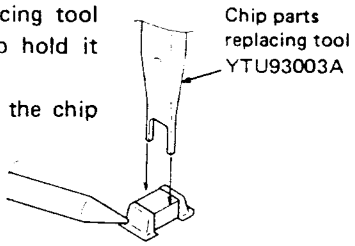


Fig. 1-3-3 R/C removal-1

3. Remove the chip parts by twisting and sliding it.

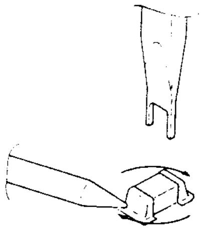


Fig. 1-3-4 R/C removal-2

- Transistors, diodes, etc.

1. Unsolder at the one-lead side of the chip parts.

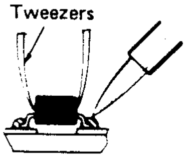


Fig. 1-3-5 Tr/Diode removal-1

2. Lift the unsoldered side upwards.

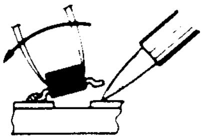


Fig. 1-3-6 Tr/Diode removal-2

3. Heat the other two leads simultaneously and remove the chip parts upwards.

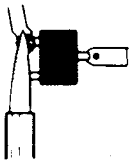


Fig. 1-3-7 Tr/Diode removal-3

1.3.3 Preheating and soldering

When setting new chip parts, especially capacitors, but except transistors, preheat them with hot air (150°C approx.) by use of a blower type of hair dryer for about 2 minutes just before solderingg. For soldering, use a soldering iron of 30 W approx.

1.3.4 How to set and solder chip parts

1. Presolder the contact points of the circuit pattern, to which the chip parts will be soldered.

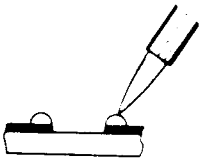


Fig. 1-3-8 Soldering-1

2. Holding down the chip parts with the chip parts replacing tool, solder it with a soldering iron.

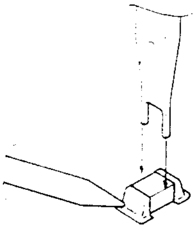


Fig. 1-3-9 Soldering-2

1.4 REMOVING OF FLAT ICs

(Recommendable manner)

1. For removing solder chips from IC's pins, use a solder remover or a wiry solder absorber.
2. Heat the IC's tips evenly by moving the chip IC replacing jig around them, and detach the IC's leads with a tool in the way of using a lever.
3. Do not reuse ICs removed once. (Discard them.)

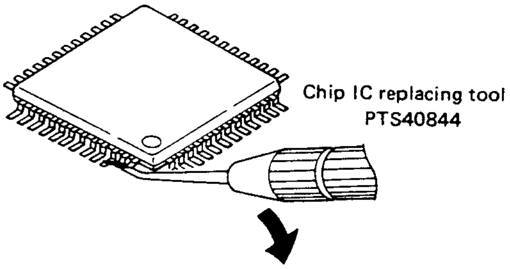


Fig. 1-4-1 Flat IC removal

1.5 DISASSEMBLY OF CAMERA SECTION

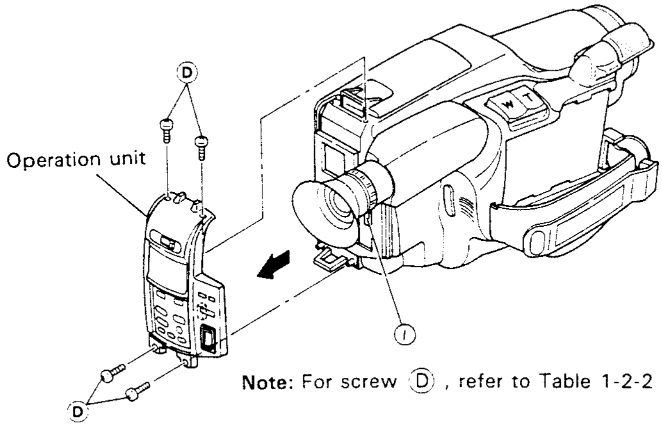
1.5.1 Operation unit

(1) Remove four screws Ⓓ.

(2) Remove connector ① in the direction of the arrow to disengage the operation unit.

Connector	No. of Pin	Connection
①	18 pin	Operation ↔ $\boxed{0}\boxed{1}$ MAIN CN51

Table 1-5-1 Destination of connector



Note: For screw Ⓓ, refer to Table 1-2-2

Fig. 1-5-1 Operation unit

1.5.2 Cassette cover

(1) Remove two screws Ⓑ and disengage the cassette cover in the direction of the arrow.

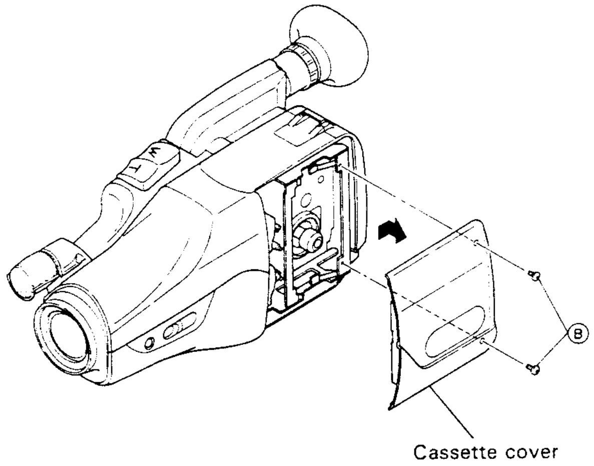


Fig. 1-5-2 Cassette cover

1.5.3 Pad

(1) Remove two screws Ⓓ and three screws Ⓒ, then disengage the pad in the direction of the arrow.

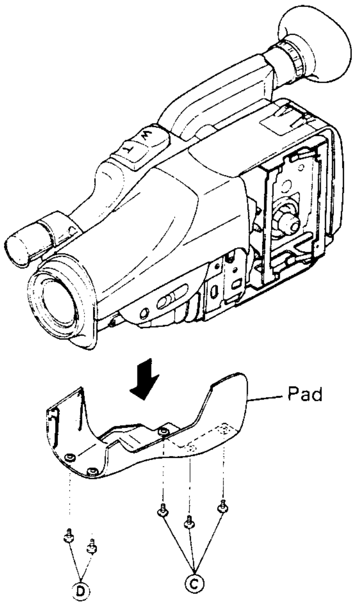


Fig. 1-5-3 Pad

1.5.4 Microphone assembly

(1) Remove screw Ⓓ.

(2) Remove connector ① carefully in the direction of the arrow while paying attention to the claw.

Connector	No. of Pin	Connection
①	3 pin	Microphone ↔ $\boxed{0}\boxed{2}$ Y/C CN11

Table 1-5-2 Destination of connector

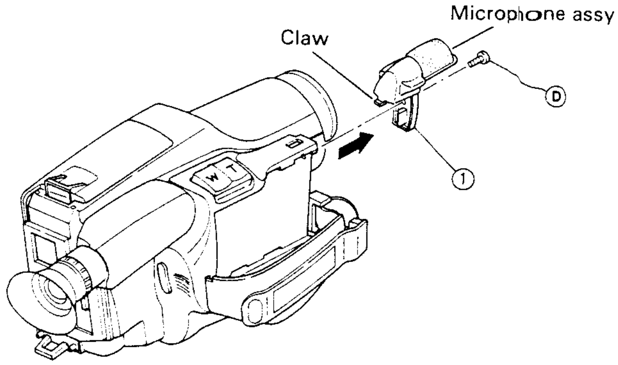


Fig. 1-5-4 Microphone assy

1.5.5 Top cover

(1) Revolve the view finder in the direction of the arrow ⓐ and remove four screws Ⓔ.
(2) Remove the top cover in the direction of the arrow ⓑ.

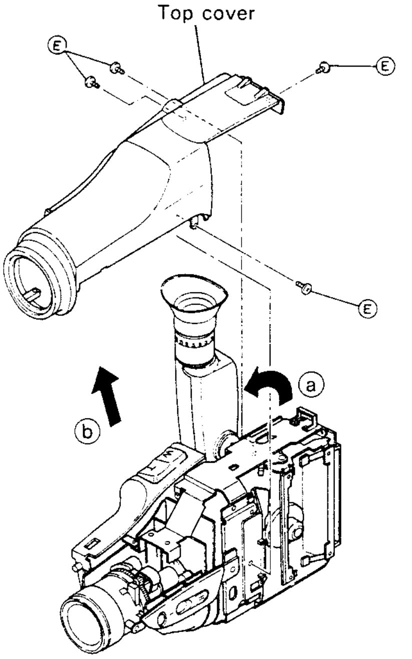


Fig. 1-5-5 Top cover

1.5.6 Electronic view finder

(1) Remove screw Ⓕ.
(2) Remove connector ① then disengage the electronic view finder.

Connector	No. of Pin	Connection
①	4 pin	01 MAIN CN35 ↔ Electronic View Finder

Table 1-5-3 Destination of connector

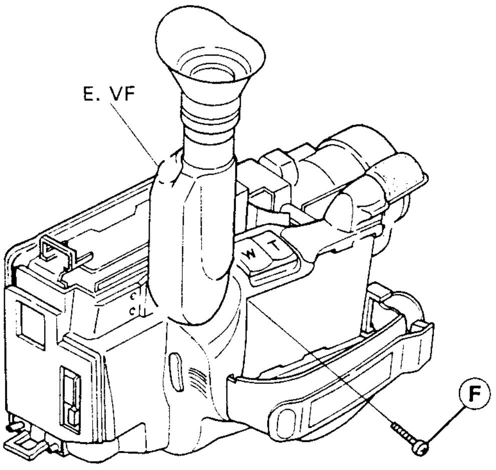


Fig. 1-5-6(A) Electronic viewfinder-1

Note: Repairing of only E. View Finder

(1) Detach the electronic view finder's lens assembly by revolving it in the direction of arrow ⓐ.
(2) Remove two screws and detach the E. VF top case.

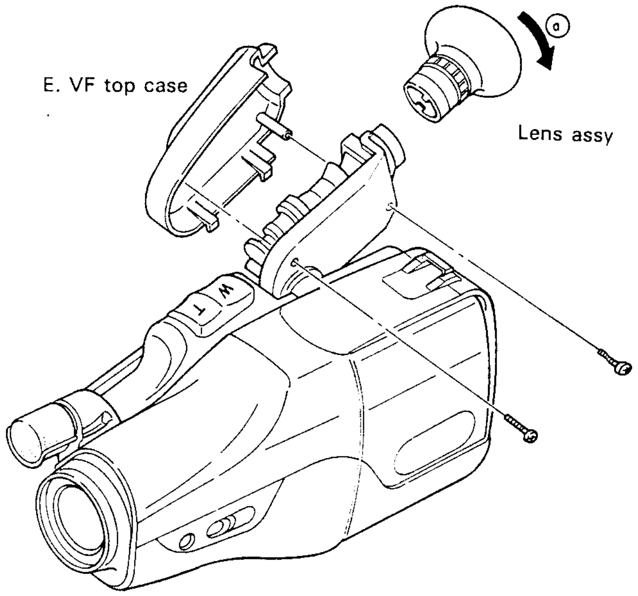


Fig. 1-5-6(B) Electronic viewfinder-2

1.5.7 Button unit

(1) Remove screws Ⓓ and Ⓔ.
(2) Remove connector ① while pulling it in the direction of the arrow to disengage the button unit.

Connector	No. of Pin	Connection
①	6 pin	14 CTL ↔ 11 VIDEO CN-V6

Table 1-5-4 Destination of connector

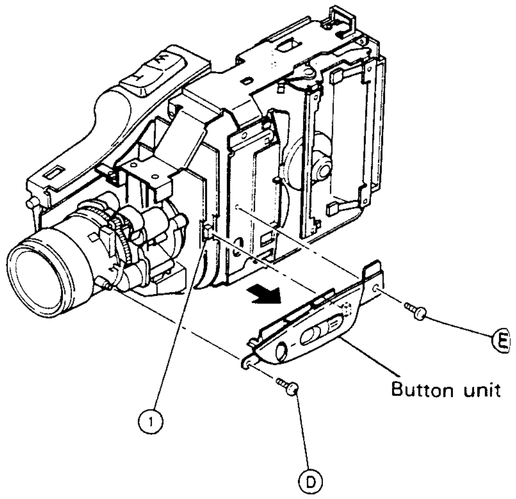


Fig. 1-5-7 Button unit

1.5.8 Lower case

(1) Remove screw Ⓓ, two screws Ⓔ and screw Ⓒ.
(2) Remove connectors ①, ② and ③ then detach the lower case in the direction of the arrow.

Connector	No. of Pin	Connection
①	5 pin	Battery terminal, trigger switch board ↔ $\boxed{0}\boxed{1}$ MAIN CN11
②	4 pin	Zoom switch ↔ $\boxed{1}\boxed{3}$ AF CN-A8
③	3 pin	Lithium battery ↔ $\boxed{1}\boxed{1}$ VIDEO CN-V5

Table 1-5-5 Destination of connectors

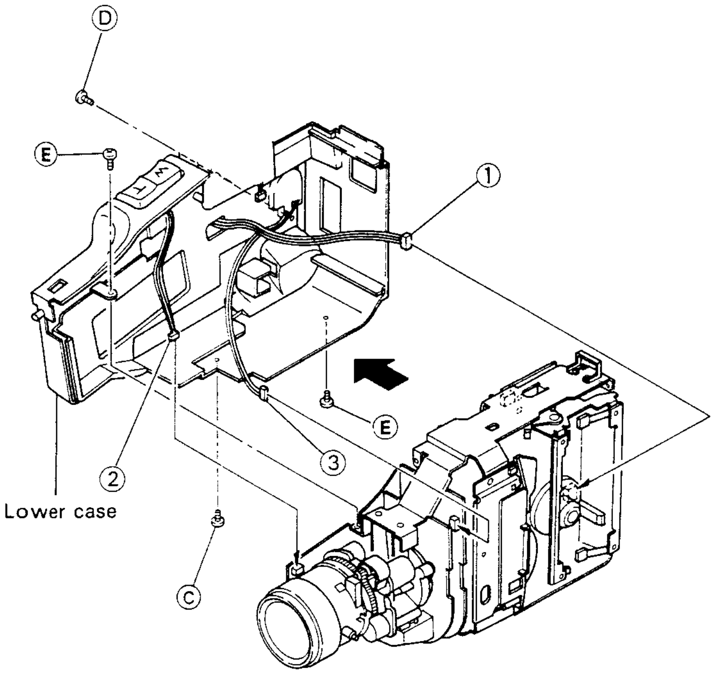


Fig. 1-5-8 Lower case

1.5.9 Battery case assembly

(1) Remove three screws Ⓐ and disengage the battery case assembly in the direction of the arrow.

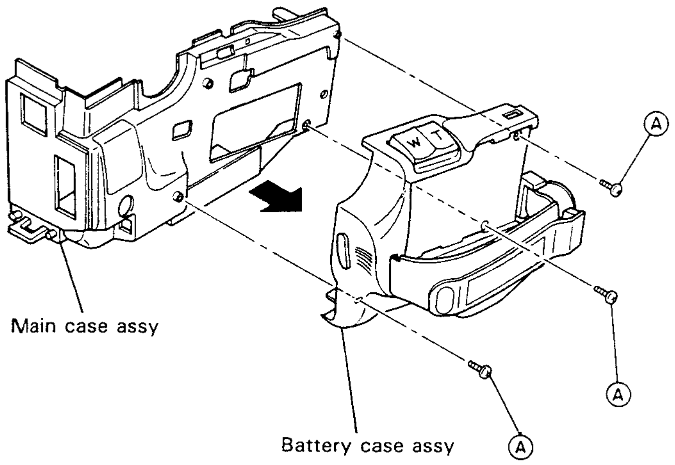


Fig. 1-5-9 Battery case assy

1.5.10 Camera section

(1) Remove two screws Ⓓ.
(2) Remove connector ①, then disengage the camera section in the direction of the arrow.

Connector	No. of Pin	Connection
①	20 pin	$\boxed{1}\boxed{1}$ VIDEO CN-V1 ↔ $\boxed{0}\boxed{1}$ MAIN CN61

Table 1-5-6 Destination of connector

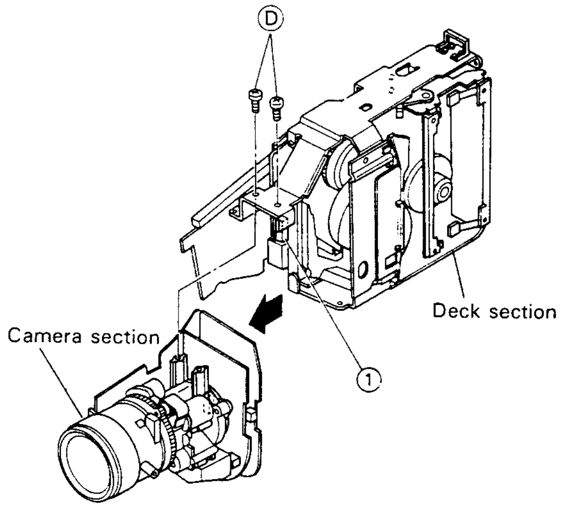


Fig. 1-5-10 Camera section

Note: **After this, set up the system in order to confirm the state of the camera section and deck section, and repair if necessary.
For camera section confirmation and repair, refer to section 1.5.11, and for the deck section confirmation and repair, refer to section 1.6.1.**

1.5.11 Setup for troubleshooting and check of the camera section

Connect the following patch cords as shown below for the camera unit's confirmation and repair setup.

Connector	No. of Pin	Connection
ⓐ	4 pin	13 AF CN-A8 ↔ zoom switch
ⓑ	20 pin	11 VIDEO CN-V1 ↔ 01 MAIN CN61
ⓒ	5 pin	01 MAIN CN11 ↔ trigger switch
ⓓ	18 pin	01 MAIN CN51 ↔ operation unit
ⓔ	6 pin	11 VIDEO CN-V6 ↔ 14 CTL CN401

Table 1-5-7 Destination of patch cords

Note: For using camera stand insert the lens portion to the ring of the holder tightly as shown in Figure.

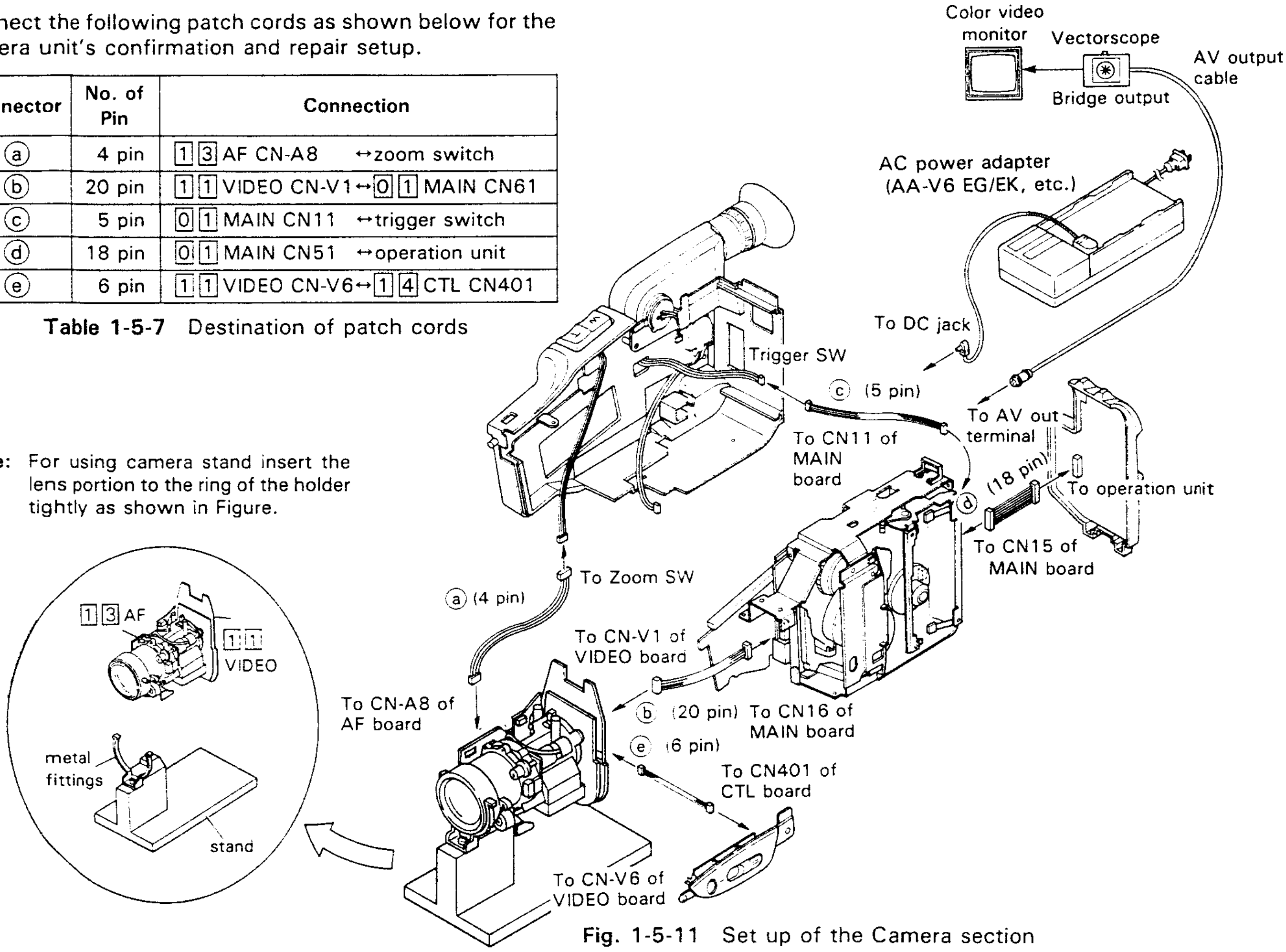

Color video monitor
Vectorscope
AV output cable
Bridge output
AC power adapter (AA-V6 EG/EK, etc.)
To DC jack
Trigger SW
ⓒ (5 pin)
To AV out terminal
To CN11 of MAIN board
ⓓ (18 pin)
To operation unit
To CN15 of MAIN board
To Zoom SW
ⓐ (4 pin)
To CN-V1 of VIDEO board
To CN-A8 of AF board
ⓑ (20 pin) To CN16 of MAIN board
ⓔ (6 pin)
To CN401 of CTL board
To CN-V6 of VIDEO board
13 AF
11 VIDEO
metal fittings
stand

Fig. 1-5-11 Set up of the Camera section

1.5.12 VIDEO board

(1) Disengage the VIDEO board while pulling connectors ①, ② and ③ in the direction of their arrows.

Connector	No. of Pin	Connection
①	12 pin	11 VIDEO CN-V2 ↔ 13 AF CN-A2
②	14 pin	11 VIDEO CN-V3 ↔ 12 SSG CN-S303
③	14 pin	11 VIDEO CN-V4 ↔ 12 SSG CN-S304

Table 1-5-8 Destination of connectors

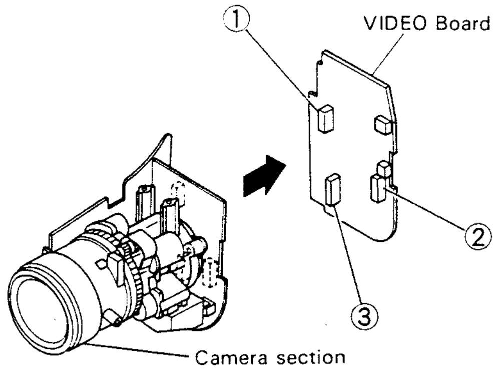

①
VIDEO Board
②
③
Camera section

Fig. 1-5-12 Video board

1.5.13 AF board

(1) Remove screw Ⓓ.

(2) Detach the AF board while drawing out connectors ① and ② (board to board) in the direction of their arrows.

(3) Next, remove connectors ③, ④, ⑤, ⑥, ⑦ and ⑧ then disengage the AF board completely.

Connector	No. of Pin	Connection
①	8 pin	13 AF CN-A4 ↔ 12 SSG CN-S302
②	6 pin	13 AF CN-A1 ↔ DC-DC CONV.
③	4 pin	13 AF CN-A10 ↔ INF. SENSOR
④	4 pin	13 AF CN-A9 ↔ AF MOTOR
⑤	2 pin	13 AF CN-A7 ↔ ZOOM MOTOR
⑥	4 pin	13 AF CN-A6 ↔ IRIS MOTOR
⑦	3 pin	13 AF CN-A11 ↔ ZOOM ENCODER
⑧	4 pin	13 AF CN-A5 ↔ HOLE ELEMENT

Table 1-5-9 Destination of connector

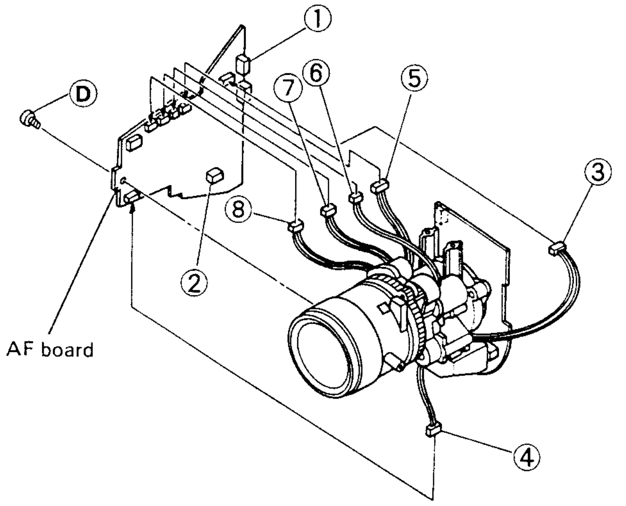


Fig. 1-5-13 AF board

1.5.14 DC-DC Converter

(1) Disengage the DC-DC converter while drawing out connector ① in the direction of the arrow.

Connector	No. of Pin	Connection
①	6 pin	DC-DC CONV. ↔ [1][2] SSG CN-S301

Table 1-5-10 Destination of connector

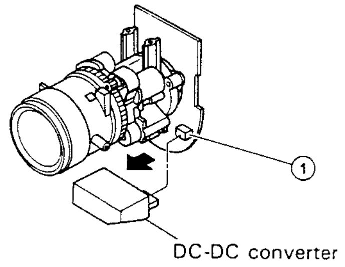


Fig. 1-5-14 DC-DC converter

1.5.15 SSG board

(1) Remove two screws Ⓖ .

(2) Disengage the SSG board in the direction of the arrow while playing attention not to bend the pin legs of IC1 (CCD).

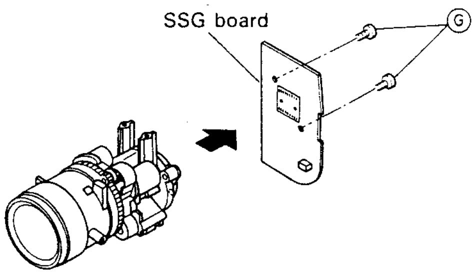


Fig. 1-5-15 SSG board

1.5.16 CCD image sensor

1. Precautions before sensor replacement
   1) Pay the most careful attention to the CCD image sensor and optical filters so that they won't be dusty, soiled or damaged. If it is soiled with fingerprints, etc., clean gently with silicone lens tissue or chamois.
   2) A new CCD image sensor is shipped with the orange protection seal applied onto the optical filter. Remove it just before installing it into the optical block.
2. Remove two screws ⓐ fixisng the imager holder into its position.
3. Remove two screws ⓑ fixing the filter holder into its position, then remove the optical low-pass filter, space rubber, CCD image sensor and imager holder.

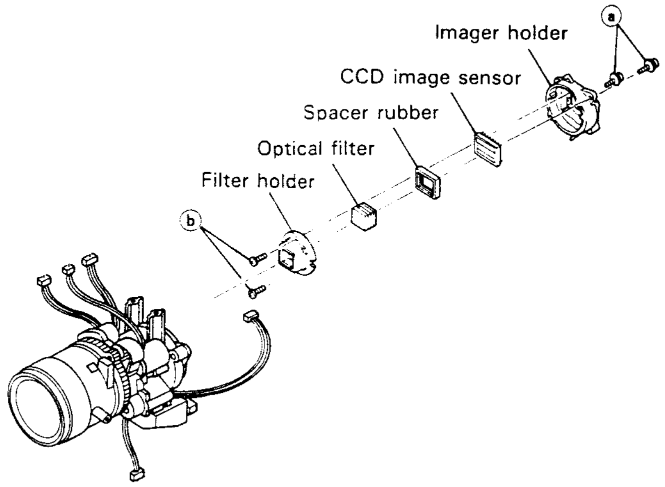


Fig. 1-5-16 CCD image sensor 1

1.5.17 Installing a new image sensor

1. Peel off the CCD image sensor's protective seal, place the sensor on the imager holder, and further overlap the spacer rubber, optical filter and filter holder in the order mentioned. When fitting these parts together, pay due attention to their directions as shown below.

Parts	Caution at assembling
Imager holder	Set the side with parts number (back side) down.
CCD image sensor	Set the side with marking down.
Space rubber	Set the CCD side horizontally.
Optical filter	Set the marking to be positioned below.

2. Next, fit the filter holder onto the imager holder with its two screws ⓑ.
3. Mount the OP block with its two screws ⓐ, paying attention not to mistake the imager holder's direction.
4. Mount the camera assembly's respective boards. The mounting is correct in connection with the screen's inclination and screen's width center if there is no eclipse, or if the light is not obstructed by the len's diameter, frame, metal fittings or hood when the screen is looked at.
5. After all these operations are consummated, confirm the autofocus. (see 3.4)

1.5.18 CRT for E. viewfinder

For disassembling the electronic viewfinder, refer to the exploded view diagram of the optical block (M5).

1. Connection of CRT connector
Connect the CRT connect by fitting its projection or notch to the CRT's marking.

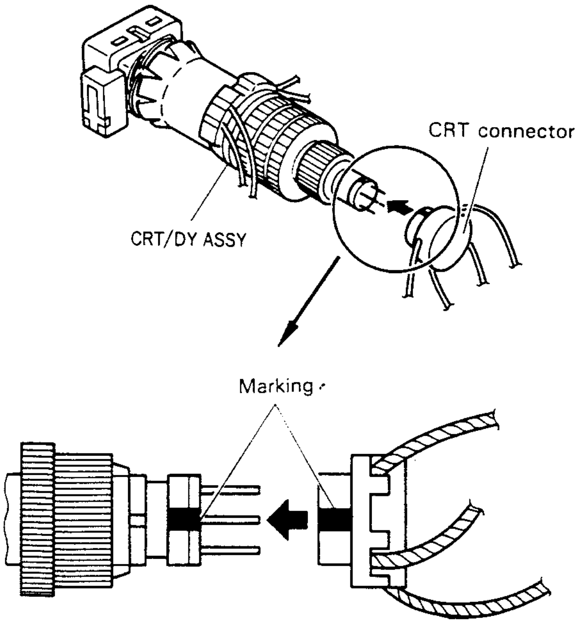


Fig. 1-5-18 (A) CRT connector

2. Connection with high voltage connector
Securely perform the connection since the connector and the connected section are loaded with high voltage in operation.
The high voltage cover is an important piece to shut out the high voltage section from other parts, therefore, used one must be discarded and be replaced with a new high voltage cover.

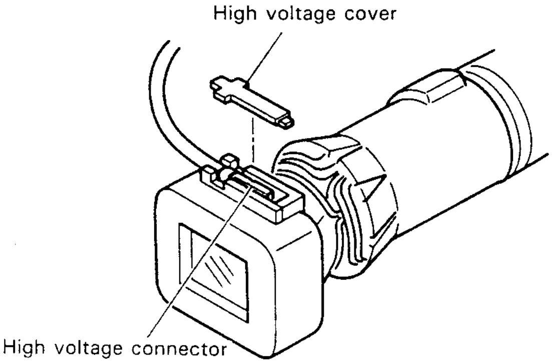


Fig. 1-5-18 (B) High voltage cover

1.6 DISASSEMBLY OF DECK SECTION

1.6.1 Connection diagram for deck unit confirmation and repair

After separating the camera unit and deck unit in conformance with section 1.5.10, connect them as shown in the accompanying diagram and set up the deck unit for its confirmation and repair.

Notes:

- When fitting a cassette tape, the cassette door will strike against the the drum, so it will be necessary to remove the door beforehand.
- In case of self-recording and playback with input signals from sources other than the camera unit, the switching point will appear in a different position. This is due to non-supply of frame pulse, and not due to any trouble.

Connector	No. of Pin	Connection
ⓐ	4/20 pin	Y/C separator ↔ 01 MAIN CN61
ⓑ	5 pin	01 MAIN CN11 ↔ trigger switch
ⓒ	18 pin	01 MAIN CN51 ↔ operation unit

Table 1-6-1 Destination of patch cords

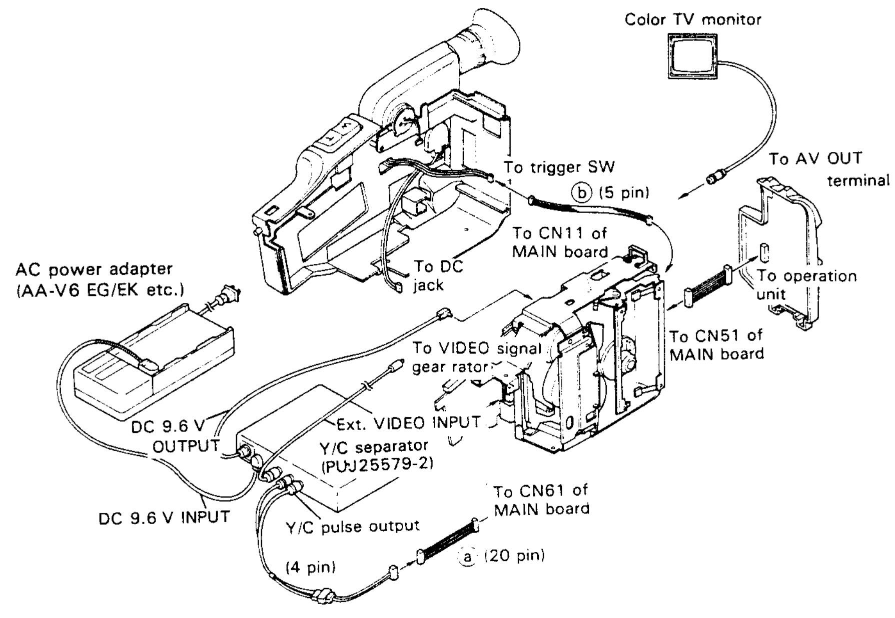

Color TV monitor
To trigger SW
ⓑ (5 pin)
To AV OUT terminal
To CN11 of MAIN board
To DC jack
AC power adapter (AA-V6 EG/EK etc.)
To operation unit
To CN51 of MAIN board
To VIDEO signal gear rator
DC 9.6 V OUTPUT
Ext. VIDEO INPUT
Y/C separator (PUJ25579-2)
DC 9.6 V INPUT
To CN61 of MAIN board
Y/C pulse output
(4 pin)
ⓐ (20 pin)

Fig. 1-6-1 Set up of the deck section

1.6.2 Guard assembly

(1) Remove two screws Ⓑ and disengage the guard assembly.

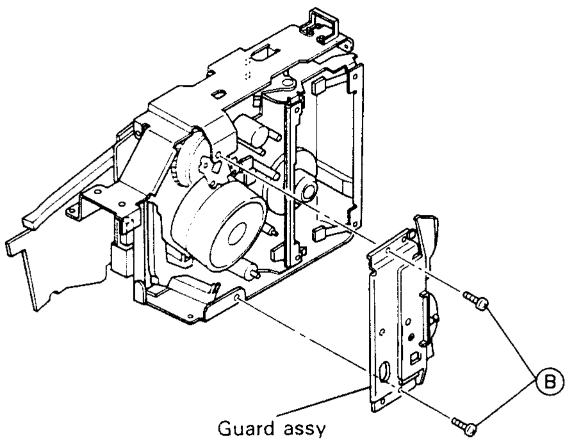


Fig. 1-6-2 Guard assy

1.6.3 Base bracket and frame bracket

(1) Remove screws Ⓗ and Ⓘ, then detach the base bracket. (When doing so, remove the end sensor's connector ① from the DRUM MDA board CN4.)

(2) Remove two screws Ⓘ, then detach the frame bracket.

Connector	No. of Pin	Connection
①	3 pin	END SENSOR↔04 DRUM MDA CN4

Table 1-6-2 Destination of connector

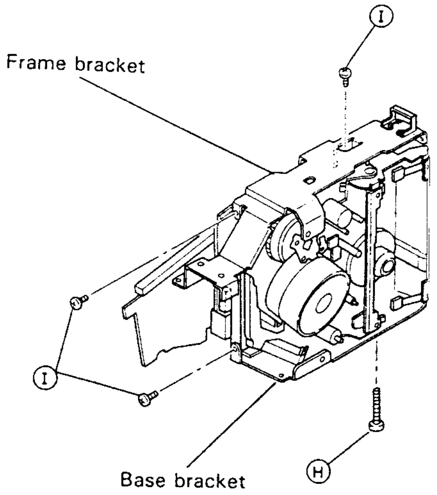

Ⓘ
Frame bracket
Ⓘ
Base bracket
Ⓗ

Fig. 1-6-3 Frame/Base bracket

1.6.4 Preamp and Y/C board

(1) Remove screw Ⓜ .
(2) Detach the preamp while drawing out the connectors ① , ② and ③ in the direction of their arrows.
(3) Remove the connector ④ , then detach the preamp completely.
(4) Detach the Y/C board while drawing out the connectors ⑤ , ⑥ and ⑦ in the direction of their arrows.

Connector	No. of Pin	Connection
①	12 pin	03 PRE AMP CN2↔VIDEO HEAD
②	14 pin	03 PRE AMP CN3↔01 MAIN CN31
③	8 pin	03 PRE AMP CN4↔02 Y/C CN15
④	3 pin	03 PRE AMP CN5↔01 MAIN CN24
⑤	8 pin	02 Y/C CN12 ↔01 MAIN CN32
⑥	8 pin	02 Y/C CN13 ↔01 MAIN CN33
⑦	8 pin	02 Y/C CN14 ↔01 MAIN CN34

Table 1-6-3 Destination of connectors

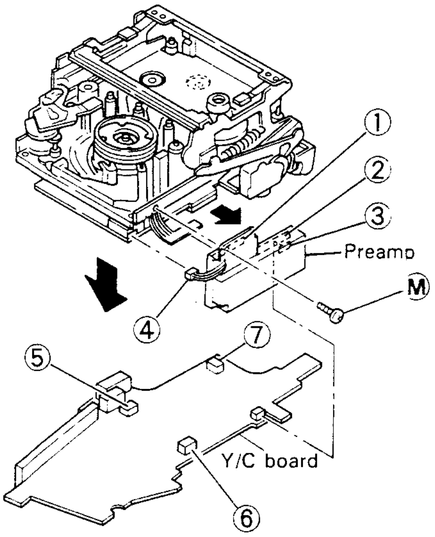


Fig. 1-6-4 Preamp and Y/C board

1.6.5 MAIN board

(1) Remove screw Ⓓ , also connectors ① and ② , then draw out the MAIN board in the direction of the arrow.
(2) Remove the connectors ③ , ④ , ⑤ and ⑥ , then disengage the MAIN board completely from the mechanism.

Connector	No. of Pin	Connection
①	14 pin	01 MAIN CN22↔04 DRUM MDA CN1
②	6 pin	01 MAIN CH41↔MODE CTL. MOTOR
③	14 pin	01 MAIN CN23↔CAPSTAN MOTOR
④	6 pin	01 MAIN CN43↔08 SENSOR
⑤	3 pin	01 MAIN CN42↔MODE CTL SW
⑥	9 pin	01 MAIN CN21↔A/C HEAD

Table 1-6-4 Destination of connectors

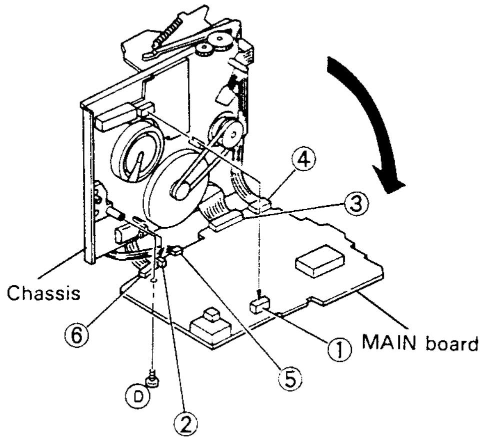


Fig. 1-6-5 MAIN board

1.6.6 Sensor and DRUM MDA board

(1) Remove four screws Ⓙ , then detach the sensor board.
(2) Remove two screws Ⓚ , next remove the connectors ① and ② , then detach the DRUM MDA board.

Connector	No. of Pin	Connection
①	15 pin	04 DRUM MDA CN2↔DRUM MOTOR
②	14 pin	04 DRUM MDA CN4↔END SENSOR

Table 1-6-5 Destination of connectors

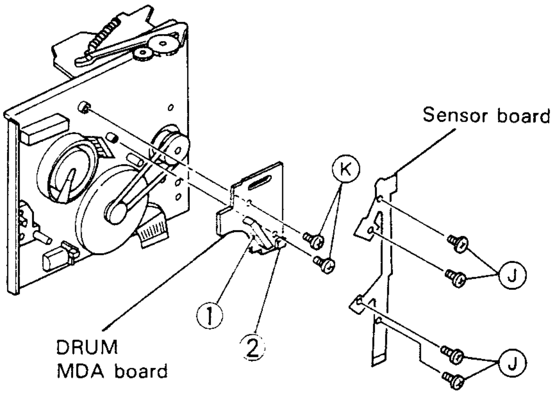


Fig. 1-6-6 Sensor and DRUM MDA boards

1.6.7 Cassette housing

(1) Remove two screws Ⓛ, next flip the legs in the directions of ⓐ and ⓑ, then remove the head. Detach the cassette housing in the direction of ⓒ.

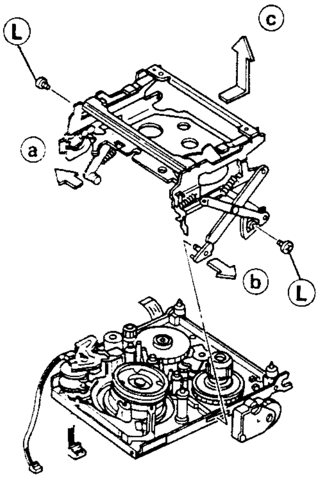


Fig. 1-6-7 Cassette housing

1.6.8 Drum assembly

(1) Remove screw Ⓗ, then remove the FPC cable that is connected to the connector (white).

(2) Remove three screws Ⓙ and disengage the drum assembly.

Note: • There is no necessity to detach the brush.

• The drum assembly will be moved when screw Ⓙ is removed, so be careful not to get injured.

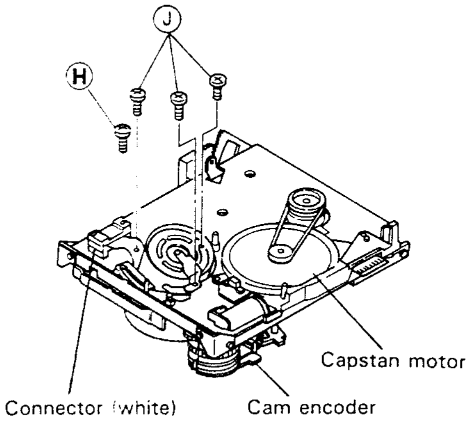
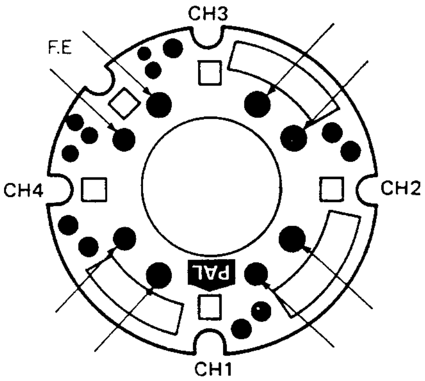

Ⓙ
Ⓗ
Capstan motor
Connector (white)
Cam encoder

Fig. 1-6-8 Drum assy

1.6.9 Replacement of upper drum

Note: At replacing the upper drum, be careful not to touch the head of a new upper drum as well as not to scratch and damage the drum.

1. Unsolder eight soldered points (incicated by arrow maks in the figure) near the center of the upper drum surface, and remove two screws.


CH3
F.E
CH4
CH2
PAL
CH1

(Big arrow mark indicates the position of CH1.)

2. Take off the upper drum. If it is hard to take it off, set a tool (provided with a new upper drum) to the upper drum by two screws ① and then tighten screw ②. This makes the removing work easy.

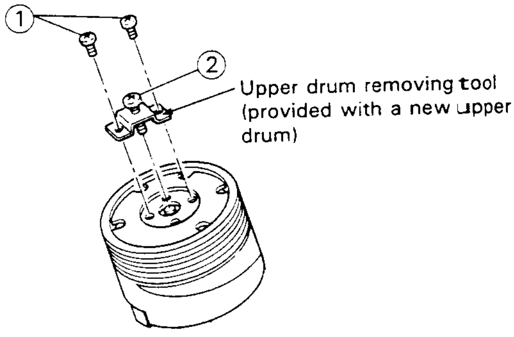

①
②
Upper drum removing tool (provided with a new upper drum)

Fig. 1-6-9(B) Upper drum removal-2

3. Prior to attaching a new upper drum, insert a hot soldering iron (50 W) into the drum's hole for 3 to 5 minutes to expand it by heating.

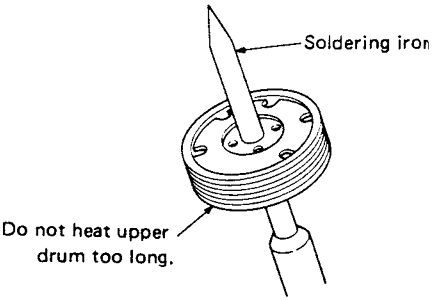

Soldering iron
Do not heat upper drum too long.

Fig. 1-6-9(C) Upper drum installation- 1

4. Correctly set a new upper drum so that the drum's CH2 hole and the lower drum's hole (see Fig. 1-6-9(D) fit with each other.

Note:

1) Before assembling the upper drum and lower drum, make sure to clean each contact surface with alcohol.
2) The CH1 hole is indicated by an arrow mark on the upper drum board. (in shown in Fig. 1-6-9(A)).

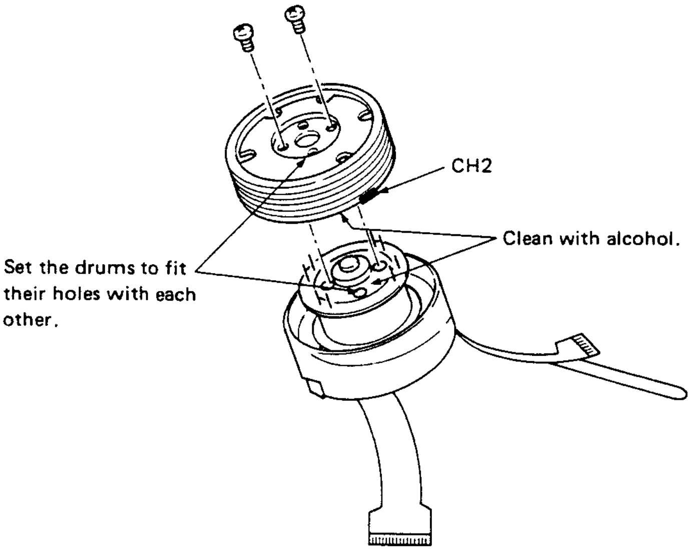

CH2
Clean with alcohol.
Set the drums to fit their holes with each other.

Fig. 1-6-9(D) Upper drum installation-2

5. For fixing the upper drum, temporarily tighten two screws first, and after the drum has got cold tighten them alternately to secure the drum.
6. After replacement of the upper drum, perform to check up and adjust of the following.

- 2.3 SERVO & INTERCHANGEABILITY
- 2.4.7 VIDEO EQ
- 2.5.2 PB ACC input level
- 2.5.3 REC color level

1.6.10 Check and adjustment of phase of mechanism

1. Loading rings

1) In the condition that the worm gear (inside the loading motor bracket assy) has been removed, turn the take-up and supply loading rings in the Unloading direction.
2) Assemble the take-up loading ring and supply loading ring so that the hole of the supply loading ring and the V-notch of the take-up loading ring are aligned with the triangle mark of the main deck being viewed from the top (in shown in Fig. 1-6-10(A)).

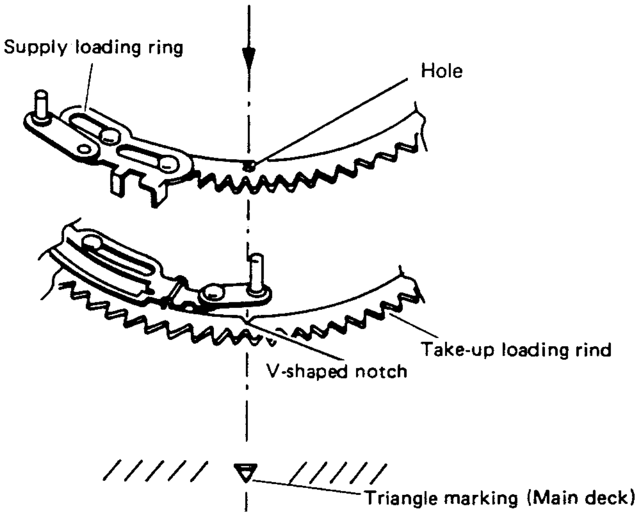

Supply loading ring
Hole
Take-up loading rind
V-shaped notch
Triangle marking (Main deck)

Fig. 1-6-10(A) Phase of loading ring-1

Note: Regarding correlative position of the pole base ass'y and ▲ mark of the guide rail

- Set the unit into the Stop mode, and move the supply guide roller and take-up guide roller close to each other by fingers (this applies to back-lash adjustment of the rings). At this time, confirm that an edge of the pole base (even if a little part) overlaps on ▲ mark.

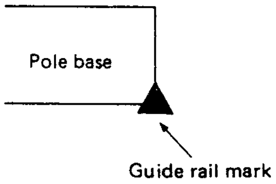

Pole base
Guide rail mark

Fig. 1-6-10(B) Phase of loading-2

2. Middle pole

1) Move the middle pole in the direction of the arrow Ⓐ.

2) Set the arm gear positioning its shaft Ⓓ aligns with the positioning hole Ⓒ and the middle pole's shaft Ⓔ in a line as shown in the figure.

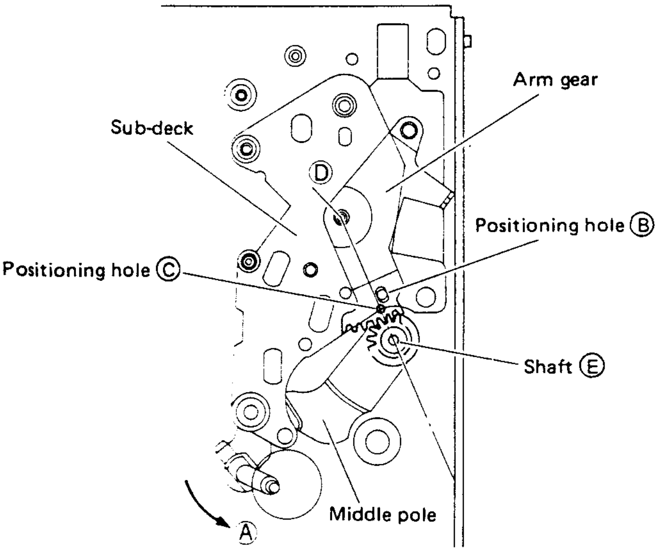

Arm gear
Sub-deck
D
Positioning hole Ⓑ
Positioning hole Ⓒ
Shaft Ⓔ
Middle pole
A

Fig. 1-6-10(C) Phase adjustment of middle pole

3. Control cam

Set the control cam (gear) as its marking is positioned in a straight line which connects the centers of its shaft and the terminal gear.

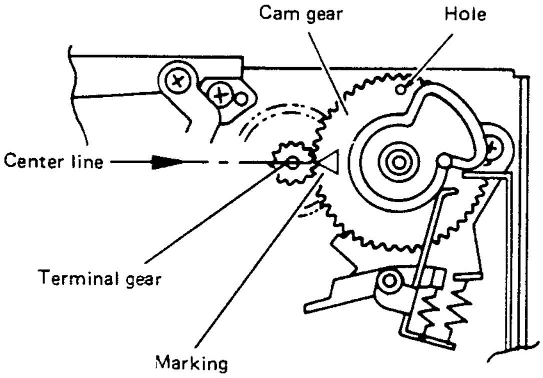

Cam gear
Hole
Center line
Terminal gear
Marking

Fig. 1-6-10(D) Phase adjustment of control cam

4. Mode control switch

Confirm that, in the Stop mode, the mode control switch has such the positional relation with others.

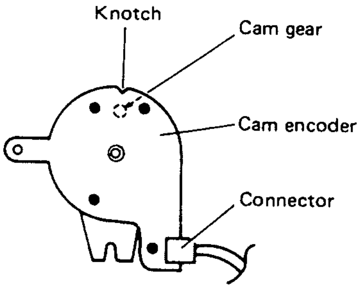

Knotch
Cam gear
Cam encoder
Connector

Fig. 1-6-10(E) Phase adjustment of mode control switch

1.7 INSPECTION AND MAINTENANCE

Since this model is equipped with rotary parts and other parts which may wear as time passes, it is important to clean the tape transport system and rotary parts as well as to apply oil and grease to them in order to make full use of its real capacity for a long time.

Besides basic maintenance work, parts should be checked periodically for wear, and replaced when necessary.

1.7.1 Standard servicing schedule for main components

The following table indicates the standard servicing period by kind of servicing such as cleaning, oiling, replacing, etc. In practice, the indicated periods will widely vary according to environmental and using conditions, but it is plain that nonfulfillment of the maintenance work not only shortens the specific period of every item sharply but also influences other components badly.

Also be aware that rubber parts may possibly deform and age as time passes even when the set is not used.

System	Symbol No.	Parts Name	Ass'y	Periodic servicing schedule (operation hours)								
				250	500	750	1000	1250	1500	1750	2000	3000
Tape Transport system	21	Impedance roller		★	★	★	★	★	★	★	★	★
	18	Supply slant pole	a									
	19	Supply guide roller	a									
	20	Tension pole	a									
	7	Middle pole	a									
	6	Take-up guide pole A	a									
	3	Take-up guide pole B	a									
	9	Take-up guide roller	a									
	10	Take-up slant pole	a									
	8	Capstan	a									
	2	Lower drum	a									
	1	Upper drum	a	★	★	☆	●	★	★	☆	●	●
	4	A/C head	a	★	★	★	★	★	★	★	★	●
	5	Pinch roller	a	★	★	★	★	★	★	★	★	●
Drive system	23	Capstan motor	a								●	
	22	Belt					○				●	○
	24	Mode control motor										●
	12	Take-up clutch gear	a	△	△	△	▲	△	△	△	▲	▲
	15	Supply reel disk	a	△	△	△	▲	△	△	△	▲	▲
	14	Center pulley	a				○				○	○
	13	Search brake lever		★	☆	★	☆	★	☆	★	☆	☆
	11	Take-up brake lever		★	★	★	☆	★	★	★	☆	☆
Others	16	Dumper					○				○	●
	17	Tension band	a				○				○	○
	25	Brush					○				○	○

★ : Cleaning
☆ : Cleaning (or Replacement if necessary)
△ : Lubrication
a : Will be provided as assembly parts for replacement

▲ : Lubrication (or Replacement if necessary)
● : Replacement
○ : Inspection or Replacement if necessary

Table 1-7-1 Maintenance schedule

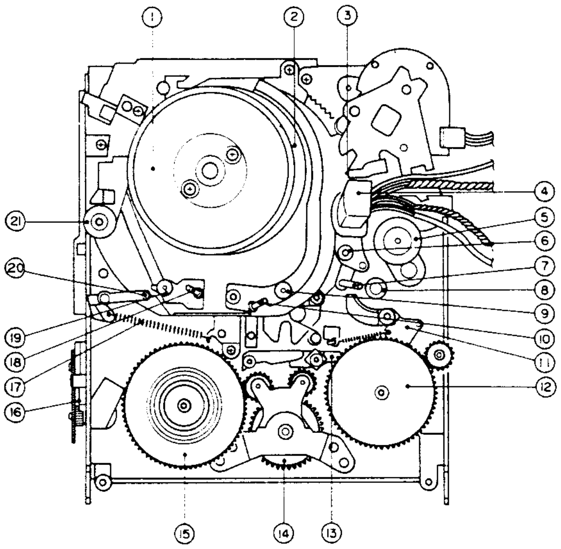


Fig. 1-7-1 Location of main mechanism parts (Top view)

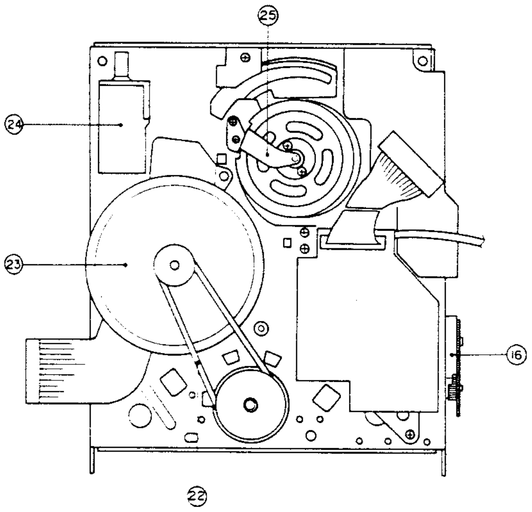


Fig. 1-7-2 Location of main mechanism parts (Bottom view)

1.7.2 Remarks

1. Cleaning

1) For cleaning of the upper drum (particularly video heads) use fine-woven cotton cloth or Kimwipe which alcohol soaks through. Regarding cleaning manner, do not move the cloth but turn the upper drum counterclockwise.
Note: Make sure not to move the cloth in the vertical direction to the video head, since it causes damage of the video heads.

2) For cleaning of parts of the tape transport system except the upper drum, use fine-woven cotton cloth or cotton stick soaked alcohol.

3) For cleaning of the search brake lever and take-up brake lever, take off the take-up clutch gear first, and then clean them with cotton stick soaked with alcohol.

4) Before loading the deck with cassette tape, confirm that the cleaned parts are completely dry.

2. Applying oil and grease

1) For parts and points to apply oil and grease, refer to the exploded views of the mechanism assembly.
Table 1-7-2 specifies oil and grease to be used.

2) When oiling, clean the objective parts first and then apply one or two drop(s) of oil. Too much oiling causes rotary parts to slip because of oil leakage.

Classifi-cation	Name	Part No.	Symbol in drawing
Grease	Moriton Grease No.1	MOS2-C	A
Oil	Cosmo Hydro HV100	YTU94027	B

Table 1-7-2 Specific oil and grease to be used

3. Checkup

After replacement of the supply reel disk and tension band, make sure to inspect and adjust back tension according to the adjustment procedure of the deck section.

4. Replacement

Replacement parts which are supplied as assmbly parts, they are indicated by "a" in the "Ass'y" column of the Table. 1-7-1.

For their parts numbers, refer to the parts list of the mechanism assembly parts.

SECTION 2
DECK SECTION ADJUSTMENT

2.1 BEFORE MAKING ADJUSTMENTS

2.1.1 Precautions

In most cases the deck section is in need of electrical adjustment, after replacement of worn mechanical parts or video heads.
In the event of malfunction with electrical circuits, troubleshooting with the aid of proper test instruments must be done first, and then commence necessary repair, replacement and adjustment, etc.
When servicing, do it with care of the following things.

1. **When adjusting the deck section in the connection shown in Fig. 2-1-1, the switching point will appear on the screen at self-recording and playback. This is reson why there is no frame pulse input from the camera section and the servo phase is not locked, and not due to any trouble.**
2. When fitting the VHS. C cassette, the cassette door will strike against the drum, so it will have to be removed beforehand.
3. When checking the TP chip, use an IC grip or some other suitable device in order to prevent any stress from being impressed on the chip.
4. When adjusting the volume, use the designated 0.35 mm minus screwdriver made of non-magnetic bit stock. (Refer to 1.2.3.)

2.1.2 Hooking up

Disconnect the deck assembly by referring to section 1, and connect it as shown in Fig. 2-1-1 by using the Y/C separator and patch cords.

Connector	No. of Pin	Connection
ⓐ	4/20 pin	Y/C separator ↔ $\boxed{0}\boxed{1}$ MAIN CN61
ⓑ	5 pin	$\boxed{0}\boxed{1}$ MAIN CN11 ↔ tgrigger switch
ⓒ	18 pin	$\boxed{0}\boxed{1}$ MAIN CN51 ↔ Operation unit

Table 2-1-1 Destination of patch cords

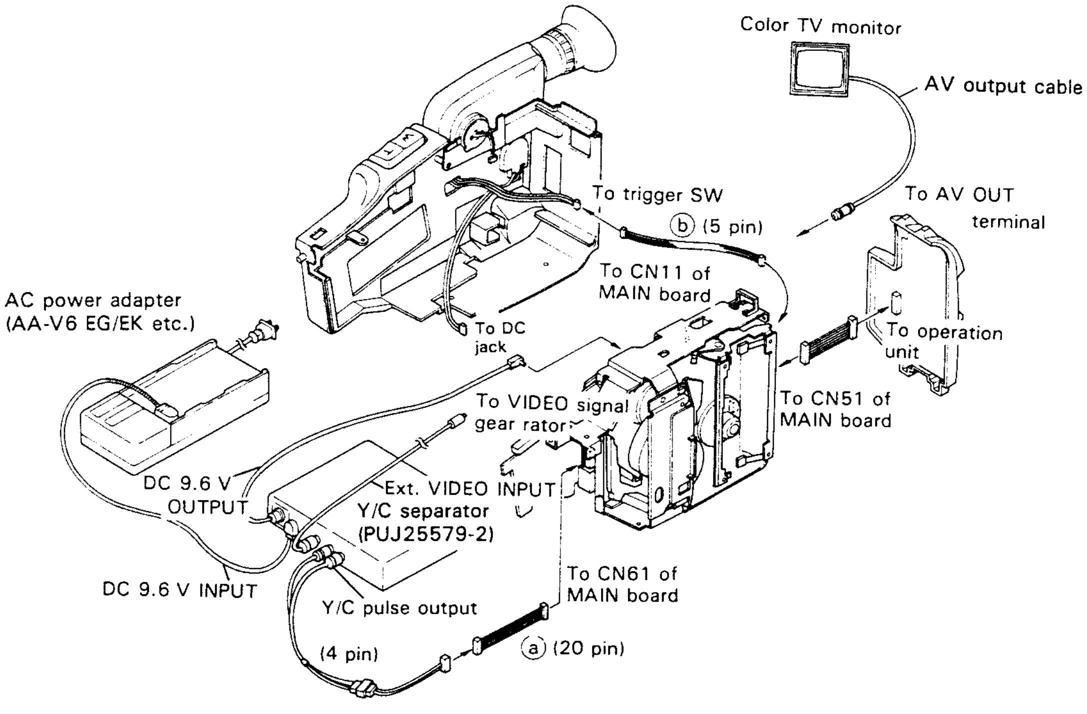

Color TV monitor
AV output cable
To trigger SW
ⓑ (5 pin)
To AV OUT terminal
To CN11 of MAIN board
AC power adapter (AA-V6 EG/EK etc.)
To DC jack
To operation unit
To VIDEO signal gear rator
To CN51 of MAIN board
DC 9.6 V OUTPUT
Ext. VIDEO INPUT
Y/C separator (PUJ25579-2)
To CN61 of MAIN board
DC 9.6 V INPUT
Y/C pulse output
(4 pin)
ⓐ (20 pin)

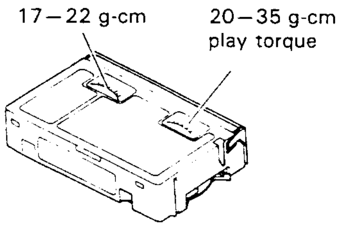
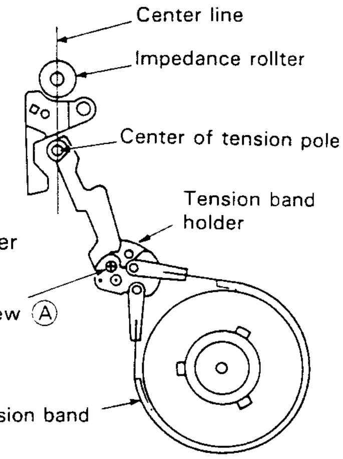
Fig. 2-1-1 Deck section adjustment

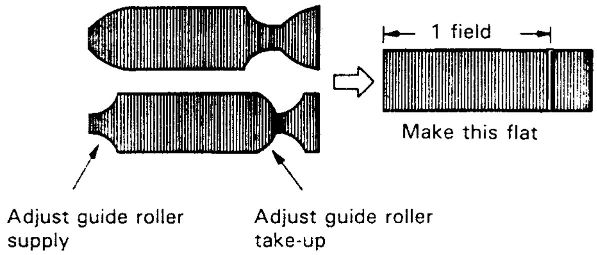
2.2 REGULATOR CIRCUIT

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
1	REG 8V	•REC	•TP 2 (REG 8 V) 01 MAIN	•R7 (REG 8 V) 01 MAIN	1) Connect a DC voltmeter between TP2 and GND, and adjust R7 for 8 ±0.2 V DC.

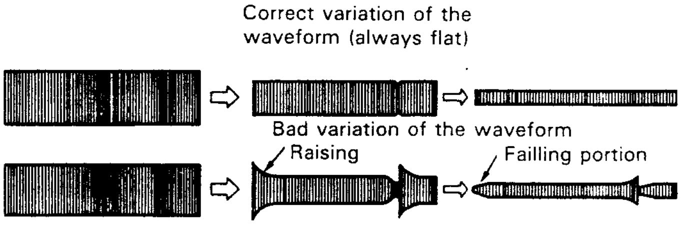
2.3 SERVO & INTERCHANGEABILITY

Note: This adjusment must be performed after replacement of the upper drum assy or/and the lower drum assy.

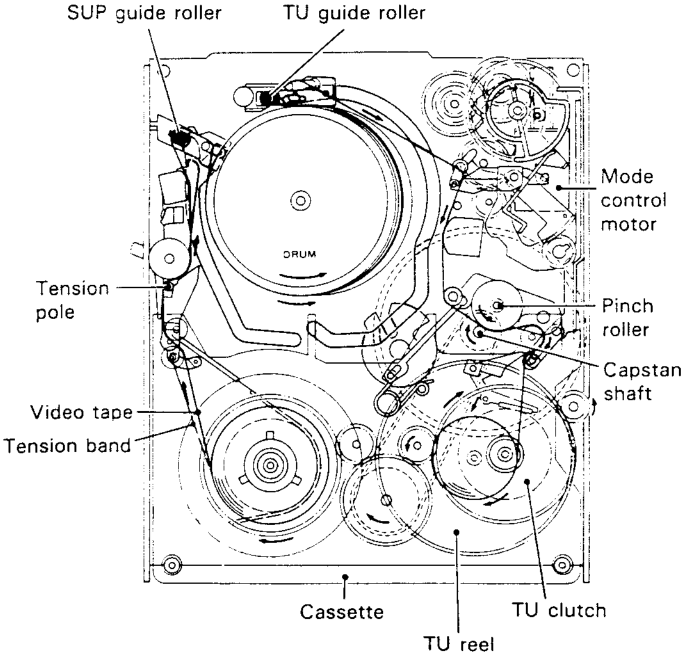
No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
1	Back tension  **Fig. 2-3-1** Cassette torque meter  Center line Impedance rollter Center of tension pole Tension band holder Screw Ⓐ Tension band **Fig. 2-3-2** Correlative position of tension pole and impedance roller	•Cassette torque meter •REC	•Cassette torque meter	•Screw Ⓐ	1) Set a cassette torque meter onto the deck in the REC mode, and confirm that the back tension is within 19.5 ± 2.5 g-cm. If necessary, loosen the screw Ⓐ a little bit and adjust the tension band holder position to obtain 19.5 ± 2.5 g-cm back tension. 2) Set the beginning portion of a EC-30 tape in the REC mode. At that time, confirm that the shaft centers of the tension pole and the impedance roller are nearly aligned on a vertical straight line to the front of the deck. **Note:** •Confirm that the tension pole does not contact the chassis at the beginning of the tape, and the impedance roller rotates at the end of the tape. •If either result of the step 1) and 2) is unsatisfactory, replace the tension band. •If there is a large difference in the values measured by the cassette torque meter, replace the supply reel disk. 3) Confirm that the cassette torque meter reads 20-35 g-cm as the play torque. If necessary, replace the TU clutch assy.

<table>
<tr><th rowspan="2">No.</th><th rowspan="2">Item</th><th rowspan="2">Mode & Signal</th><th>Test Point</th><th>Adjustment Parts</th><th rowspan="2">Procedure</th></tr>
<tr><th colspan="2">Waveform & Adjustment</th></tr>
<tr><td>2</td><td>Tape pattern</td><td>•Alignment tape SP stairstep (MHPE-C or MH-C2)</td><td>•TP501 (TP FM)
•TP101 (DRUM FF) (Ext. trigger)
$\boxed{0}\boxed{1}$ MAIN</td><td>•SUP & TU guide rollers</td><td rowspan="2">1) Observe waveform at TP501 with external trigger (+) of TP101.
2) Play stairstep signal of the alignment tape and maximize the FM waveform by the TRACKING control.
3) If the FM waveform is not flat, adjust the supply and take-up guide rollers with a 1.5 mm hex. wrench.
Note: To prevent the tape from damage, turn the guide rollers slowly.
4) By varying the TRACKING control, vary the FM waveform output from maximum to minimum (and vice versa) gradually, and confirm that the variation proceeds in a flat shape. (Fig. 2-3-4).
5) If the FM waveform breaks in the varying process, adjust height of guide roller(s) subtly every breaking so that variation proceeds as flat as possible.
Repeat the steps 4) and 5) to find a shape of flat variation.
6) Set for stop mode and then for playback mode again, since the height of guide rollers may move during adjustment.
Confirm, when varying the Tracking CTL, FM waveform variation is always flat.</td></tr>
<tr><td></td><td colspan="4">

1 field
Make this flat
Adjust guide roller supply
Adjust guide roller take-up

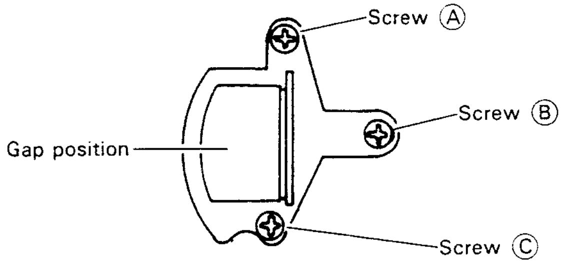
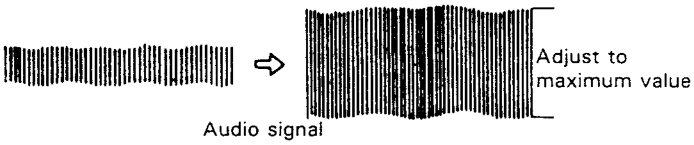
Fig. 2-3-3 Tape pattern adjustment-1


Correct variation of the waveform (always flat)
Bad variation of the waveform
Raising
Failling portion

Fig. 2-3-4 Tape pattern adjustment-2</td></tr>
<tr><td></td><td></td><td>•REC then PB</td><td></td><td></td><td rowspan="2">7) Record the signal and play it back to confirm that FM waveform is flat.
Note: If there is FM falling at the supply side during self-recording and playback, recheck Backtension at first.
When Backtension is normal, replay stairstep signal of the alignment tape and perform fine-adjustment of the supply guide pole height to obtain flat FM waveform.
After obtaining flat FM waveform, turn the supply guide pole counterclockwise by 90 degrees in order to obtain well-balanced FM waveforms between self-recording and alignment tape playback.
8) Through the above steps, confirm that there occur no wrinkling and damage in the tape around the impedance roller and TU side guide pole whenever the deck is in operation of Loading/Unloading, Search Rewind, and at mode change from Search Rewind to Play mode.
If wrinkling or damage in the tape occurs aroung the TU guide pole, adjust the angle (slant) of the A/C head to the tape so that the tape normally runs along the lower flange of the guide pole.</td></tr>
<tr><td></td><td colspan="4">

SUP guide roller
TU guide roller
DRUM
Mode control motor
Tension pole
Pinch roller
Capstan shaft
Video tape
Tension band
Cassette
TU clutch
TU reel

Fig. 2-3-5 Tape transport system</td></tr>
</table>

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
3	Audio/ control head Height & Azimuth	•Alignment tape (Audio 6 kHz) (MHPE-C or MH-C2)	•TP303 (AUDIO OUT) $\boxed{0}\boxed{1}$ MAIN	•Audio/control head	1) Play back the 6 kHz stairstep segment of the alignment tape and observe waveform at TP303. **Note:** If the output level is about −6 dBs (1.1 Vp-p, 0.39 Vrms) and level variation is within −2 dB, it is normal and need not to adjust. **Note:** Screw Ⓐ is not for adjustment purposes. Never turn screw Ⓐ. This model does not have a full erase head. The signals are erased by the flying erase, audio erase and control erase heads. For this reason, if the height of the A/C head is not correct, it can lead to erasing of the video signal and not to erasing the former control signal and thus to faulty operation during playback (particularly playback with another set). For this reason, screw Ⓐ has been adjusted to a standard height that includes service parts. 2) Turn screws Ⓑ and Ⓒ in succession by small and equal increments at a time and adjust for maximum audio output level at A/V cable output. With reference screws screw Ⓐ, adjust azimuth with screw Ⓒ and screw Ⓑ so that small tape wrinkles are not produced at the take-up guide pole, but at the same time, audio output becomes maximum and level fluctuations minimum.
			 **Fig. 2-3-6** A/C head azimuth  **Fig. 2-3-7** Audio output		

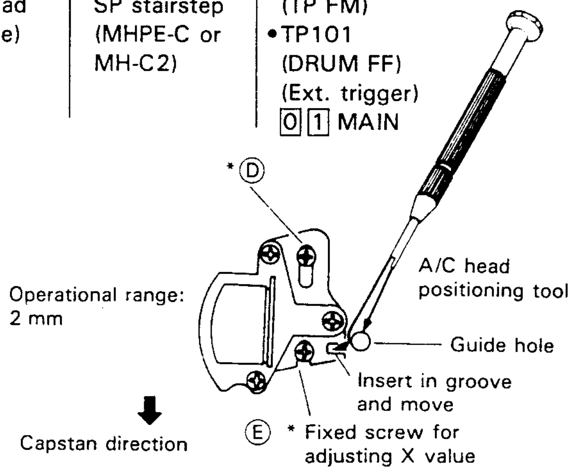
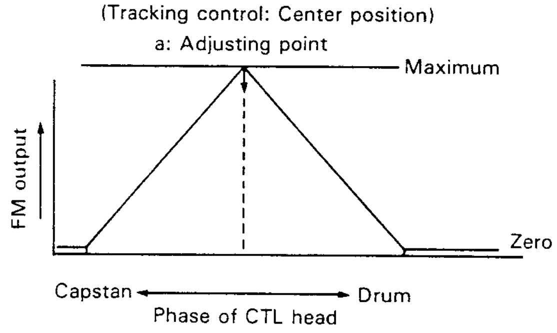
<table>
<tr><th rowspan="2">No.</th><th rowspan="2">Item</th><th rowspan="2">Mode & Signal</th><th>Test Point</th><th>Adjustment Parts</th><th rowspan="2">Procedure</th></tr>
<tr><th colspan="2">Waveform & Adjustment</th></tr>
<tr><td rowspan="2">4</td><td rowspan="2">Phase of CTL head (X value)</td><td rowspan="2">•Alignment tape SP stairstep (MHPE-C or MH-C2)</td><td>•TP501 (TP FM)
•TP101 (DRUM FF) (Ext. trigger)
0 1 MAIN</td><td>•Control head</td><td rowspan="2">1) Observe waveform at TP501 with external trigger (+) of TP101.
2) While varying the Tracking CTL, confirm the following matter. When the Tracking CTL is center position, FM level should be maximum.
3) If item 2) is not satisfied, the adjustment must be performed. Slightly loosen screws Ⓓ and Ⓔ and set the tip of the A/C head positioning tool in the groove and guide hole respectively. At first, put the A/C head fully in the direction of the capstan and then, gradually turn the tool clockwise and find out the point "a".
4) Fasten screws Ⓓ and Ⓔ. Confirm step 2).
5) If possible, perform recording. Play that tape in the 4 head deck VCR and make sure that interchangeability is normal.</td></tr>
<tr><td colspan="2">
*Ⓓ
A/C head positioning tool
Operational range: 2 mm
Guide hole
Insert in groove and move
Capstan direction
Ⓔ * Fixed screw for adjusting X value
Fig. 2-3-8 CTL head phase


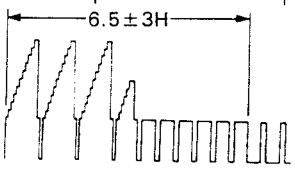
Fig. 2-3-9 CTL head phase adjusting point</td></tr>
<tr><td rowspan="2">5</td><td rowspan="2">PB switching point</td><td rowspan="2">•Alignment tape SP staristp (MHPE-C or MH-C2)
•Tracking control: Center</td><td>•TP8 (VIDEO OUT)
0 2 Y/C
•TP101 (DRUM FF) (Ext. trigger)
0 1 MAIN</td><td>•R127 (PB SW POINT)
0 1 MAIN</td><td rowspan="2">1) Observe waveform at TP8 with external trigger from TP101.
2) Adjust R127 so that the trigger point is 6.5 H before V. sync. signal.</td></tr>
<tr><td colspan="2">

Fig. 2-3-10 PB switching point</td></tr>
</table>

2.4 PRE AMP CIRCUIT

Note: This adjustment should be performed only when self-recording picture has flicker and B/W reversal after replacing the upper drum or Pre-amp board. It is necessary to correct each head characteristic obtain the optimum picture quality.

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
1	Video Head Resonance /Fo	•MH-C2 RF sweep	•TP501 (TP FM) 0 1 MAIN	•Separate chart	1) Play RF sweep portion of MH-C2. 2) Connect the oscilloscope to TP501 with external trigger (−) CN3, pin 10 on the pre-amp board. 3) Vary the tracking CTL to get the maximum FM output at TP501. 4) For more easily observing the waveform, adjust VR2 for maximum output in the 4.8 MHz portion. 5) Adjust VC2 to set the resonance point to 4.8 MHz, and make a note of the 4.8 MHz and 2 MHz (Q ratio) as shown in Fig. 2-4-1. 6) Repert step (4) through (6) for CH-2 to CH-4 according to the left side table. 7) At the ratio of step 5) adjust each Q ratio to that of the least effecient channel.

	Trigger (−)	Adjustment (R)	Adjustment (C)
CH-1	CN3, pin 10	VR 2	VC 2
CH-2	CN3, pin 11	VR 4	VC 4
CH-3	CN3, pin 12	VR 1	VC 1
CH-4	CN3, pin 13	VR 3	VC 3

Table 2-4-1 Adjust point

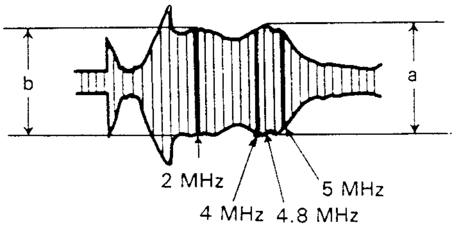


Fig. 2-4-1 PB FM

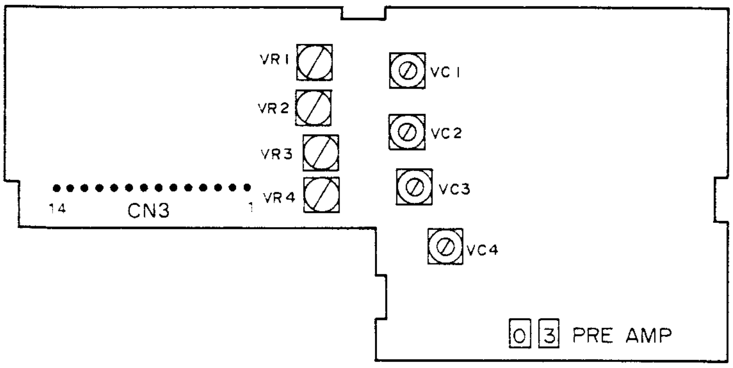
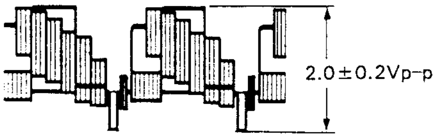
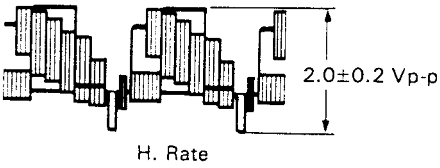
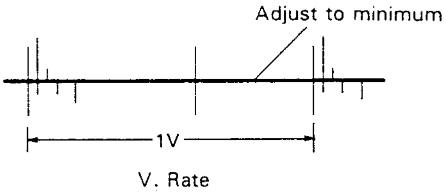
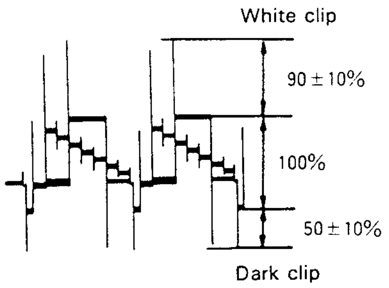
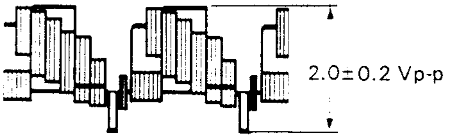
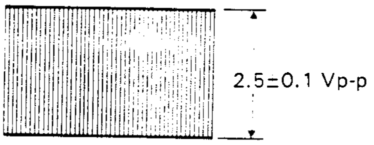
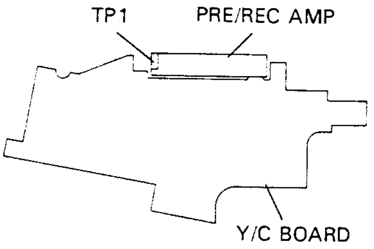
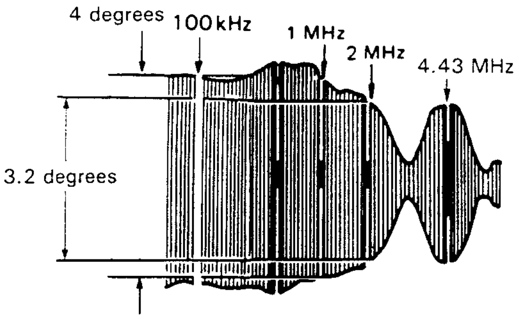


Fig. 2-4-2 PRE/REC board VR layout chart

2.5 Y (LUMINANCE) CIRCUIT

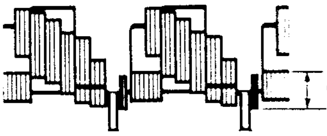
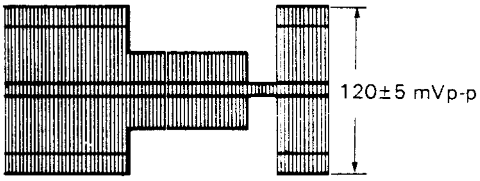
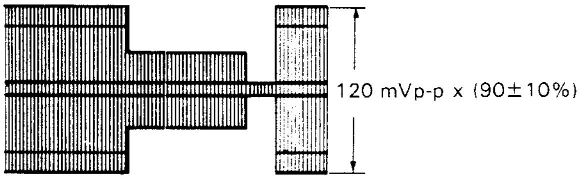
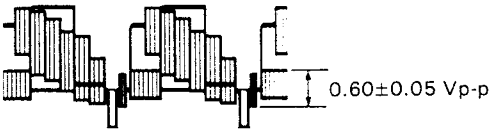
Note: Unless otherwise specified, all test points and adjustment parts are located on $\boxed{0}\boxed{2}$ Y/C board.

No.	Item	Mode & Signal	Test Point Waveform & Adjustment	Adjustment Parts	Procedure
1	EE Y Level	•EE •Color bar	•TP8 (VIDEO OUT)  **Fig. 2-5-1** EE Y LEVEL	•R208 (EE Y LEVEL)	1) Adjust R208 for 2.0 Vp-p Y level at TP8.
2	PB Y level	•Alignment tape Color bar (MHVE-2C or MH-C2)	•TP8 (VIDEO OUT)  **Fig. 2-5-2** PB Y level	•R203 (PB Y LEVEL)	1) Play the color bar signal of the alignment tape. 2) Adjust R203 for 2.0 Vp-p Y level at TP8.
3	YNR input level	•Alignment tape Color bar (MHVE-2C or MH-C2)	•TP2 (DEMOD OUT) •TP3 (1H DL DEMOD OUT)  **Fig. 2-5-3** YNR input level	•R210 (1H DL SIG LEVEL)	1) Play the color bar signal of the alignment tape. 2) Connect one channel of dual trace oscilloscope to TP2 and other channel to TP3. Change CH-2 to reverse (INV) mode and align both channel's VOLTs/DIV. SW to the same range and select Virtical mode SW to ADD. 3) Adjust R210 for minimum level in order to adjust to the same level.
4	White/dark clip level	•REC •Color bar	•TP4 (MAIN EMPHA OUT)  **Fig. 2-5-4** White/dark clip	•R205 (WHITE CLIP) •R204 (DARK CLIP)	1) Adjust R205 and R204 at TP4 so that white clip level becomes 90% and dark clip level becomes 50% respectly.

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
5	Carrier & deviation	•REC •No input signal •REC then PB •Color bar	•TP1 (REC FM MOD OUT) •TP8 (VIDEO OUT)  **Fig. 2-5-5** PB Y level	•R206 (CARRIER) •R207 (DEVIATION)	**Note:** This adjustment should be performed only when EE and playback of the prerecorded tape are normal, while the sync at self-recording is distorted (poor carrier set) or S/N is extremely poor (poor deviation). 1) Connect a frequency counter to TP1, and adjust R206 for 3.8 MHz ±100 kHz without input signal. 2) Record the color bar signal and then play the same portion. Confirm that TP8 output level is 2.0 Vp-p. 3) If it is out of the above specification, adjust R207 during recording and repeat above step 2).
6	REC FM level	•REC •Color bar	•TP1 (REC FM OUT) $\boxed{0}\boxed{3}$ PRE AMP •TP101 (DRUM FF) (Ext. trigger) $\boxed{0}\boxed{1}$ MAIN  **Fig. 2-5-6** REC FM level	•R201 (REC FM LEVEL)	1) Connect the oscilloscoape to TP1 of preamp and TP101 which is for external trigger(−). 2) Adjust R201 for 2.5 Vp-p FM level. 
7	VIDEO EQ	•REC then PB •Color sweep	•TP8 (VIDEO OUT)  **Fig. 2-5-7** PB RF E.Q.	•R202 (PB RF EQ)	**Note:** This adjustment should be performed only when a playback picture at self-recording is not sharp (low by 2 MHz component) or there is B/W reversal (high by 2 MHz component) in if after the upper drum was replaced. 1) Record the color sweep signal and play it to observe waveform at TP8. 2) If the sweeper's 100 kHz marker frequency is for 4 scale divisions on the oscilloscope screen, adjust R202 so that 2 MHz marker level becomes 3.2 scale divisions. **Note:** After re-assembling the deck and camera sections together with, record a high contrast object. While observing the playback picture, confirm that there is no B/W reversal and picture is sharp.

2.6 COLOR CIRCUIT

Note: Unless otherwise specified, all test points and adjustment parts are located on 02 Y/C board.

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
1	EE color level	•EE •Color bar	•TP8 (VIDEO OUT)	•R209 (EE COLOR LEVEL)	1)Adjust R209 for 0.60 Vp-p burst level.
	 0.60±0.05 Vp-p **Fig. 2-6-1** EE Barst level				
2	PB ACC input level	•Alignment tape color bar (MHVE-2C or MH-C2)	•TP6 (RB COLOR ACC IN) •CN12 pin 13 (SW A) (Ext. trigger) 01 MAIN	•R212 (PB COLOR ACC INPUT LEVEL)	1) Observe waveform at TP6 with external trigger from pin 13 of CN12 on the MAIN board. 2) Play the color bar signal of the alignment tape. 3) Adjust R212 so that the highest channel level becomes 120 mVp-p.
	 120±5 mVp-p **Fig. 2-6-2** REC ACC input level				
3	REC color level	•REC then PB •Color bar	•TP6 (PB COLOR ACC IN) •CN12 pin 13 (SW A) (Ext. trigger) 01 MAIN	•R211 (REC COLOR LEVEL)	1) Adjust R211 repeatedly in recording so that the highest channel level becomes 90% of PB ACC input level (step 3) of 2) in playback.
	 120 mVp-p x (90±10%) **Fig. 2-6-3** REC color level				
4	PB color level	•REC then PB •Color bar	•TP8 (VIDEO OUT)	•R213 (PB COLOR LEVEL)	1) Record the color bar signal and play it to observe waveform at TP8 and adjust R213 so that burst level becomes 0.60 Vp-p.
	 0.60±0.05 Vp-p **Fig. 2-6-4** PB color level				

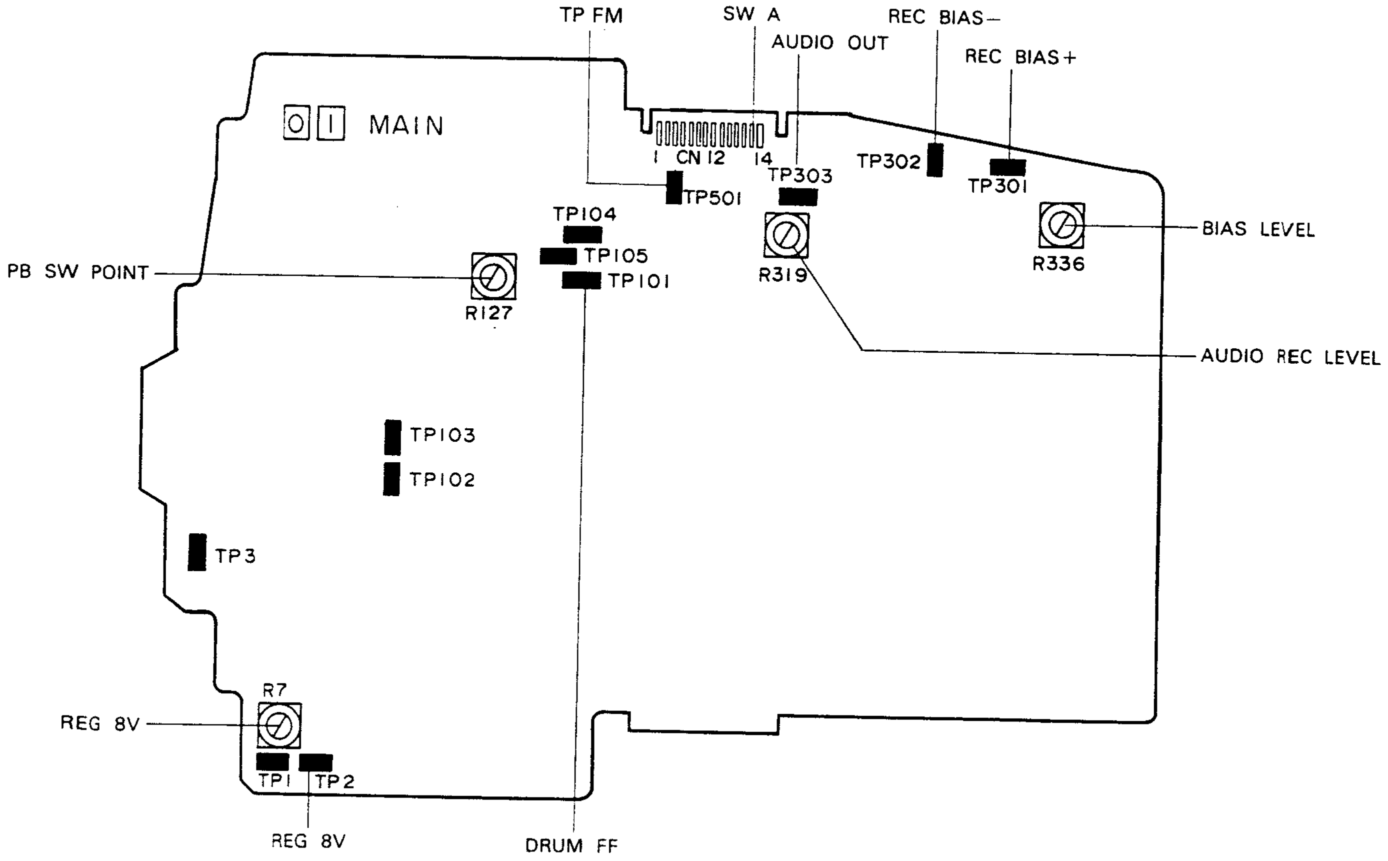
2.7 AUDIO CIRCUIT

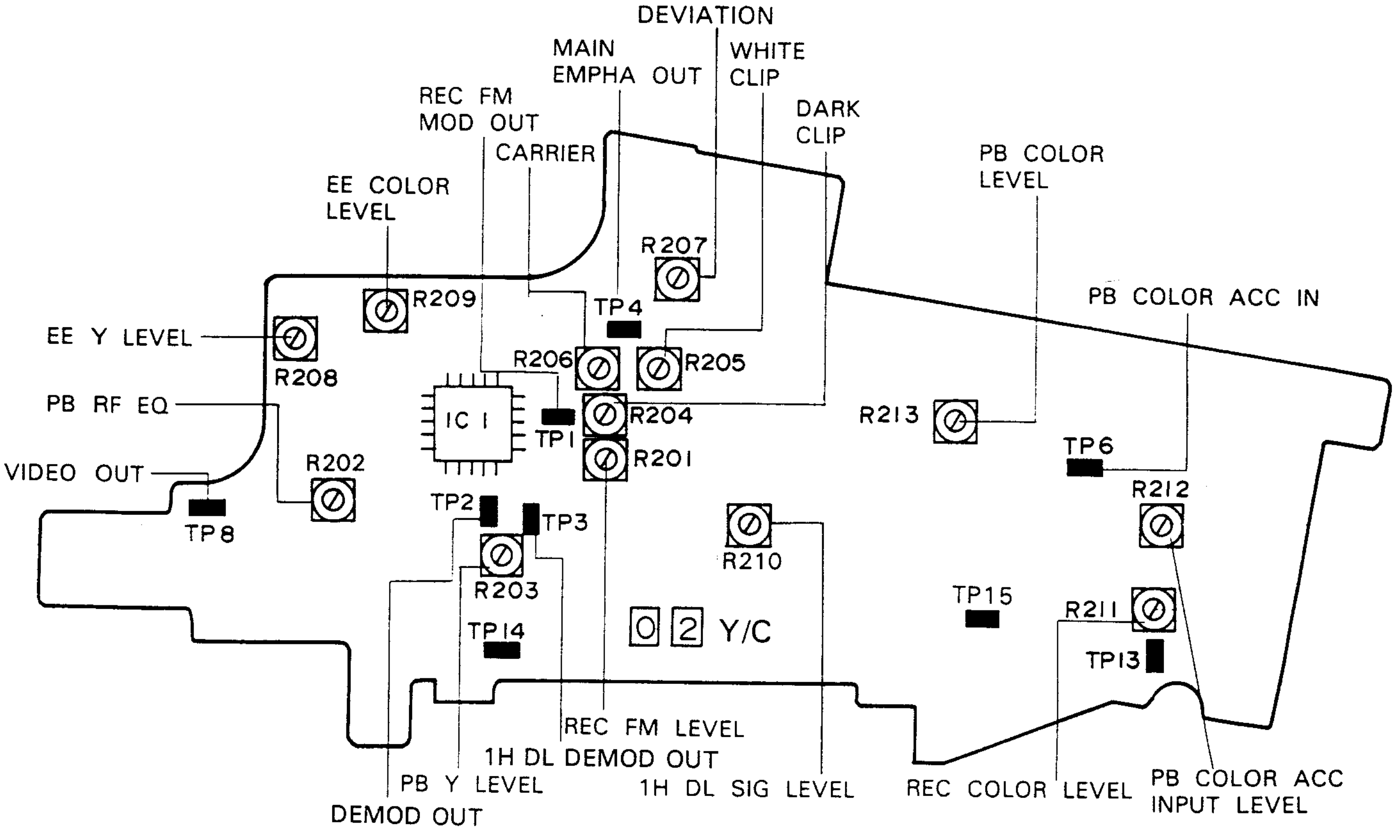
Note: All test points and adjustment parts are located on $\boxed{0}\boxed{1}$ MAIN board.

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
1	Audio bias level	•REC •No input signal	•TP301 (REC BIAS +) •TP302 (REC BIAS −)	•R336 (BIAS LEVEL)	1) Connect the audio tester to TP301(HOT) and TP302(GND). Set for recording mode without input. 2) Adjust R336 for −49 dBs (6.65 mVp-p, 2.35 mVrms).
2	Audio REC level	•REC then PB •AUDIO 1 kHz	•TP303 (AUDIO OUT)	•R319 (AUDIO REC LEVEL)	1) Supply 1 kHz, −68 dBs (0.9 mVp-p, 0.32 mVrms) signal to the pin 11 of CN11 on the Y/C board. 2) Record that signal and then play the same portion and adjust R319 for −6 dBs (1.1 Vp-p, 0.39 Vrms).

•LOCATION OF TEST POINTS AND VRs ON THE DECK SECTION'S BOARDS

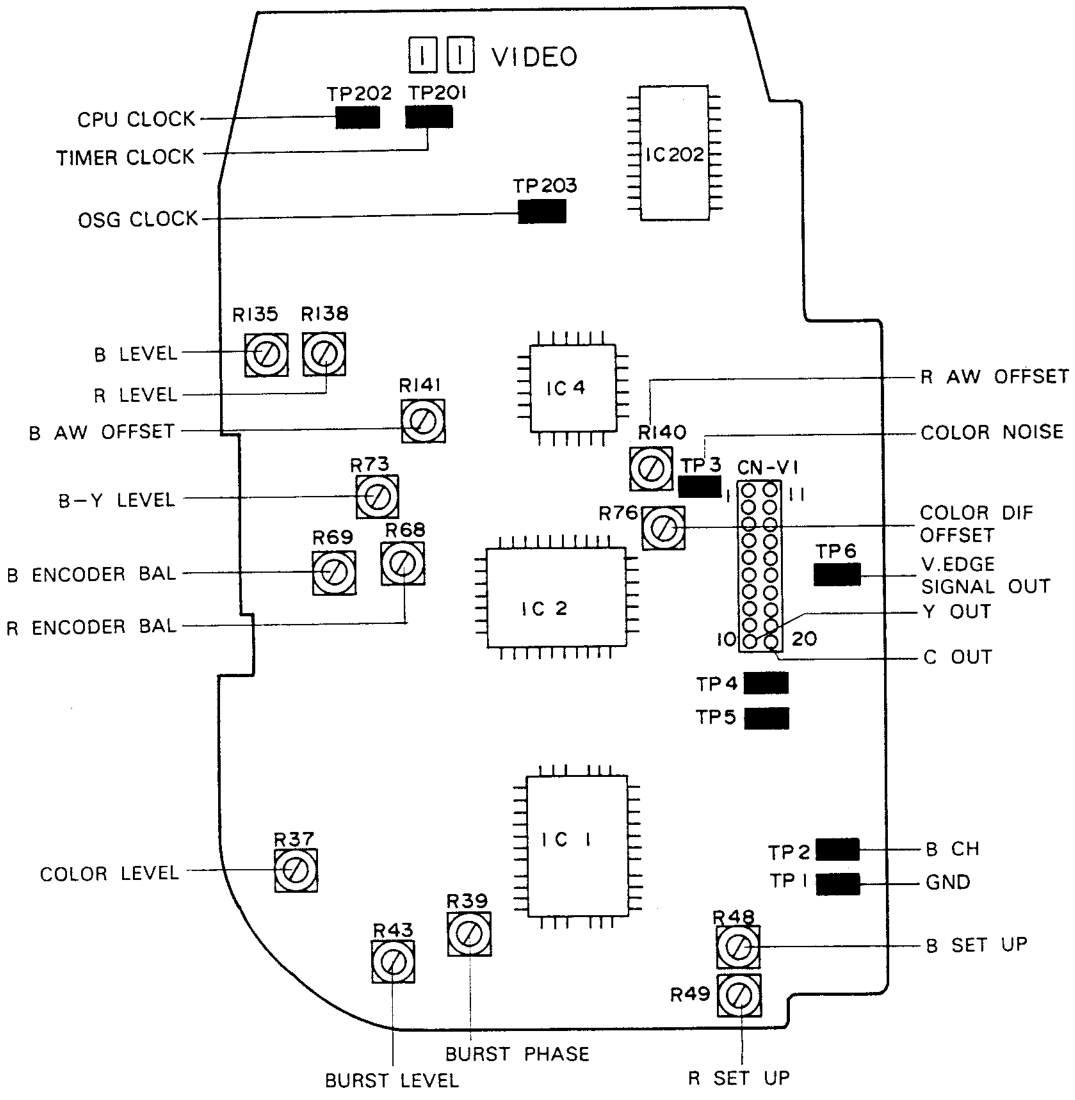
—MAIN—


TP FM
SW A
AUDIO OUT
REC BIAS−
REC BIAS+
01 MAIN
1 CN12 14
TP501
TP303
TP302
TP301
TP104
TP105
TP101
PB SW POINT
R127
R319
R336
BIAS LEVEL
AUDIO REC LEVEL
TP103
TP102
TP3
R7
REG 8V
TP1
TP2
REG 8V
DRUM FF

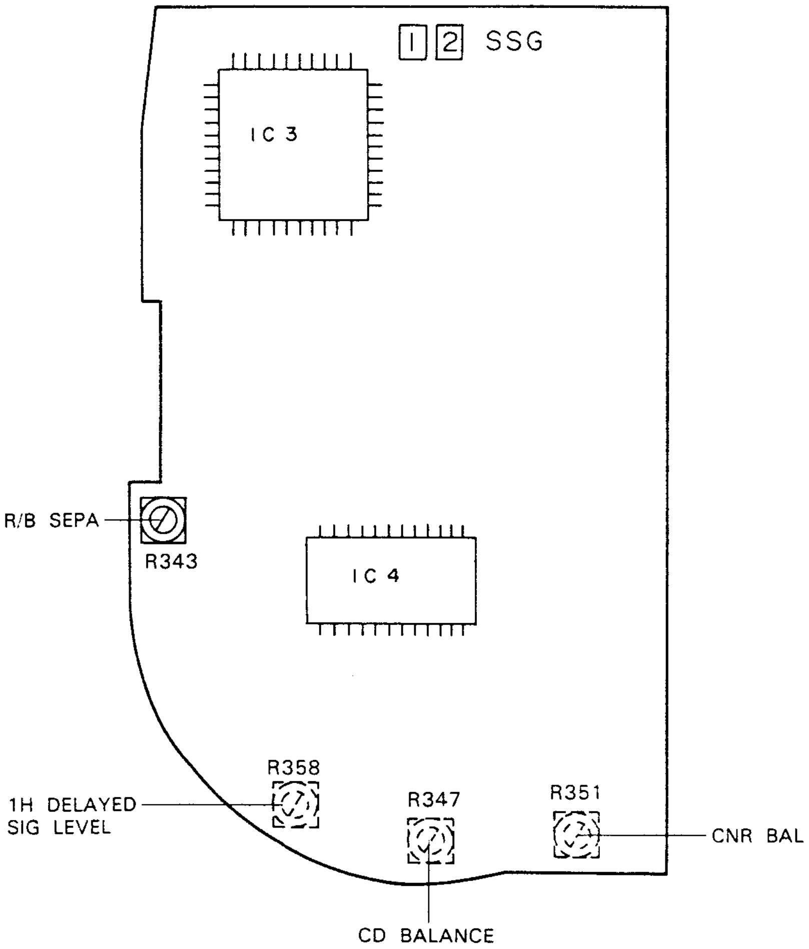

DEVIATION
MAIN EMPHA OUT
WHITE CLIP
REC FM MOD OUT
DARK CLIP
CARRIER
PB COLOR LEVEL
EE COLOR LEVEL
R207
PB COLOR ACC IN
R209
TP4
EE Y LEVEL
R206
R205
R208
PB RF EQ
IC 1
R204
R213
TP1
TP6
R202
R201
VIDEO OUT
R212
TP8
TP2
TP3
R210
R203
TP15
R211
TP14
0 2 Y/C
TP13
REC FM LEVEL
1H DL DEMOD OUT
PB Y LEVEL
1H DL SIG LEVEL
REC COLOR LEVEL
PB COLOR ACC INPUT LEVEL
DEMOD OUT

•LOCATION OF TEST POINTS AND VRs ON THE CAMERA SECTION'S BOARDS

—VIDEO—

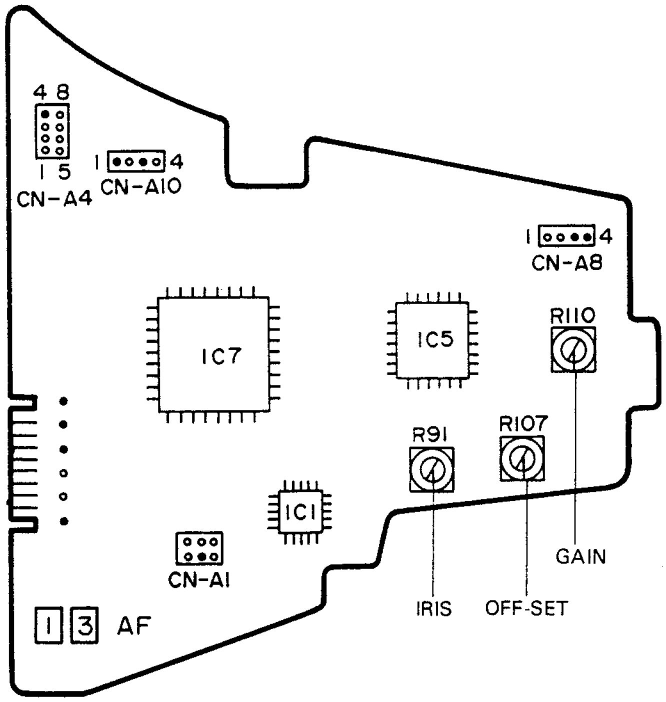

VIDEO
TP202
TP201
CPU CLOCK
TIMER CLOCK
TP203
OSG CLOCK
IC202
R135
R138
B LEVEL
R LEVEL
R141
B AW OFFSET
IC 4
R AW OFFSET
R140
COLOR NOISE
TP3
CN-V1
R73
B-Y LEVEL
R76
COLOR DIF OFFSET
R69
R68
B ENCODER BAL
R ENCODER BAL
IC 2
TP6
V.EDGE SIGNAL OUT
Y OUT
C OUT
1
11
10
20
TP4
TP5
IC 1
R37
COLOR LEVEL
TP2
B CH
TP1
GND
R39
R43
R48
B SET UP
R49
BURST PHASE
BURST LEVEL
R SET UP

—SSG—



1 2 SSG
IC 3
R/B SEPA
R343
IC 4
R358
1H DELAYED SIG LEVEL
R347
R351
CNR BAL
CD BALANCE

—AF—



4 8
1 5
CN-A4
1 4
CN-A10
1 4
CN-A8
IC7
IC5
R110
R91
R107
IC1
CN-A1
1 3 AF
GAIN
IRIS
OFF-SET

SECTION 3
CAMERA SECTION ADJUSTMENT

3.1 BEFORE ADJUSTMENTS

3.1.1 Precautions

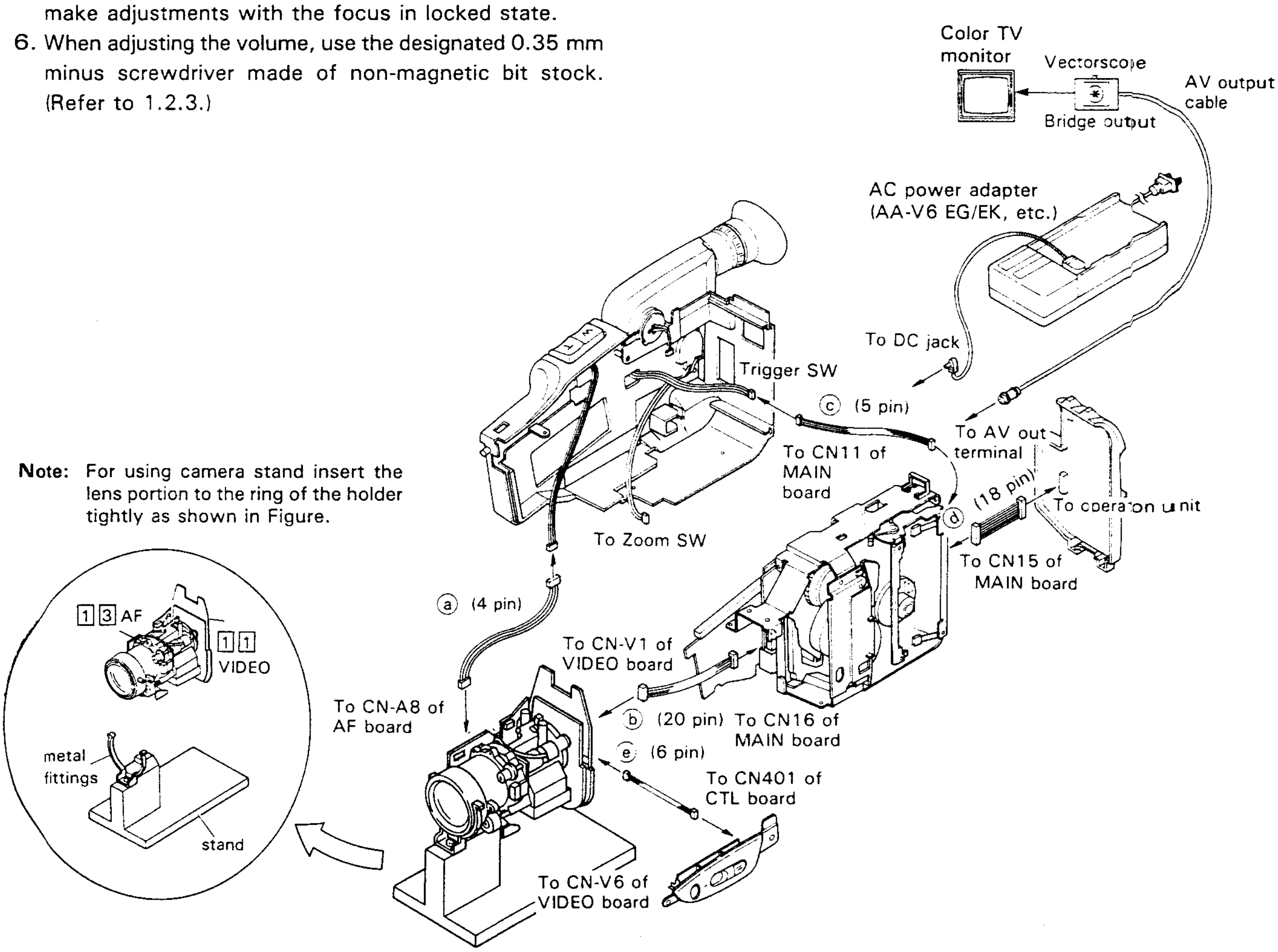
1. Use two or more lamps for illumination. The color temperature should be over 3,200 K and the brightness over 1,200 lux.
2. Be sure to use non-soiled test pattern and camera filter.
3. Make adjustments at a place not influenced by extraneous light.
4. When checking the waveform with the H rate, connect the $\boxed{1}\boxed{1}$ VIDEO's ten CN-V1 pins (Y OUT) to the oscilloscope's CH-B side, next synchronize with the minus trigger, then check the designated check points.
5. This camera adopts the full range autofocus system that permits automatic focus-matching over 1.5 cm-infinitive. Also, the zoom and focus are mutually interlocked. Therefore, when matching the focus, the zoom may be drawn to the wide side. Too, when photographing the color bar pattern or gray scale pattern when making adjustments, the zoom may be actuated if some different image enters the camera's field of vision, so be sure to make adjustments with the focus in locked state.
6. When adjusting the volume, use the designated 0.35 mm minus screwdriver made of non-magnetic bit stock. (Refer to 1.2.3.)
7. When making the adjustments, the following modes are to be adopted if no other mode is specified specially:
   - Rehearsal mode
   - Shutter speed: Standard
   - Focus: Locked state

3.1.2 Hooking up

Disconnect the camera assembly by referring to Section 1, connect it as shown in Fig. 3-1-1 by using the patch cords.

Connector	No. of Pin	Connection
ⓐ	4 pin	$\boxed{1}\boxed{3}$ AF CN-A8 ↔ Zoom switch
ⓑ	20 pin	$\boxed{1}\boxed{1}$ VIDEO CN-V1 ↔ $\boxed{0}\boxed{1}$ MAIN CN61
ⓒ	5 pin	$\boxed{0}\boxed{1}$ MAIN CN11 ↔ Trigger switch
ⓓ	18 pin	$\boxed{0}\boxed{1}$ MAIN CN51 ↔ Operation unit
ⓔ	6 pin	$\boxed{1}\boxed{1}$ VIDEO CN-V6 ↔ $\boxed{1}\boxed{4}$ CTL CN401

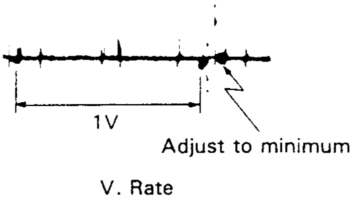
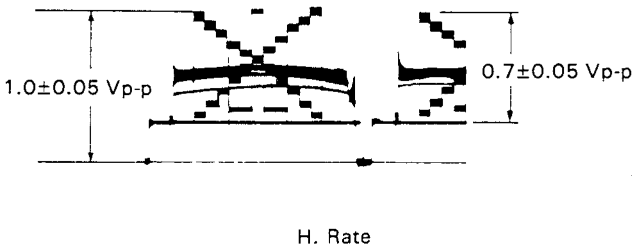
Table 3-1-1 Destination of patch cords


Color TV monitor
Vectorscope
AV output cable
Bridge output
AC power adapter (AA-V6 EG/EK, etc.)
To DC jack
Trigger SW
ⓒ (5 pin)
To AV out terminal
To CN11 of MAIN board
(18 pin)
ⓓ
To operation unit
To CN15 of MAIN board
To Zoom SW
ⓐ (4 pin)
To CN-V1 of VIDEO board
To CN-A8 of AF board
ⓑ (20 pin) To CN16 of MAIN board
ⓔ (6 pin)
To CN401 of CTL board
To CN-V6 of VIDEO board
13 AF
11 VIDEO
metal fittings
stand

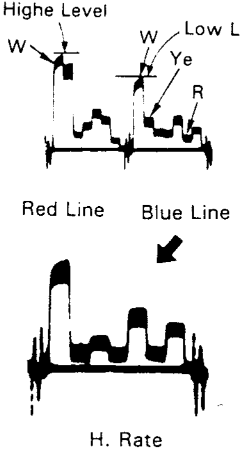
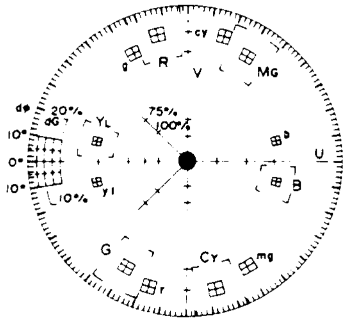
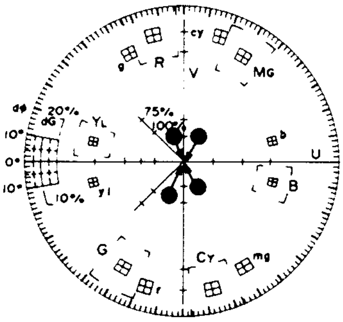
Note: For using camera stand insert the lens portion to the ring of the holder tightly as shown in Figure.

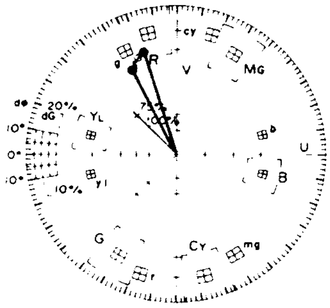
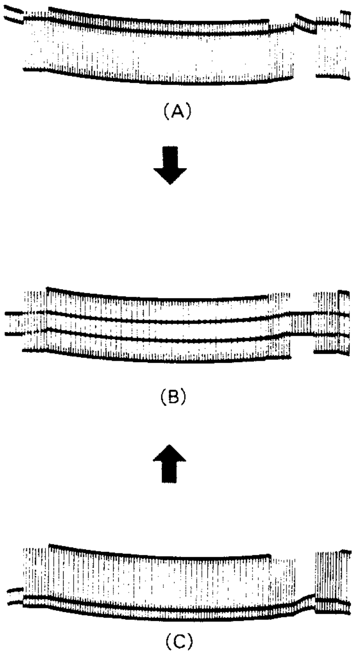
Fig. 3-1-1 Connections for adjustment

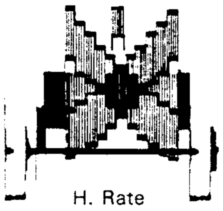
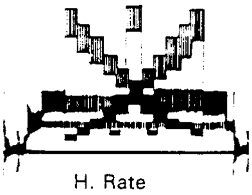
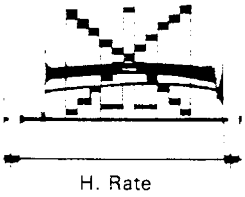
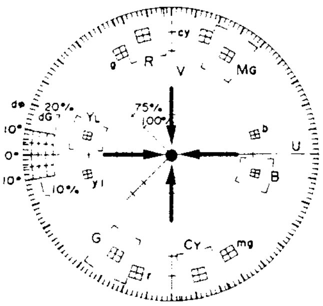
3.2 Y (LUMINANCE) CIRCUIT

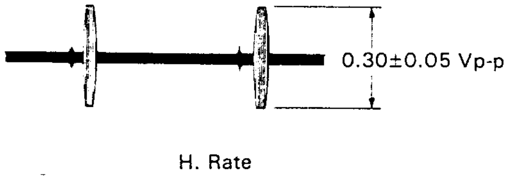
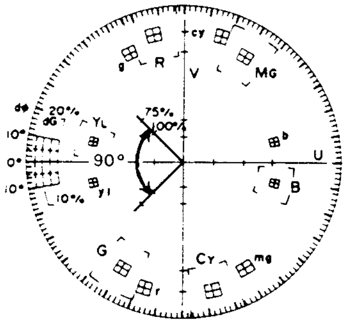
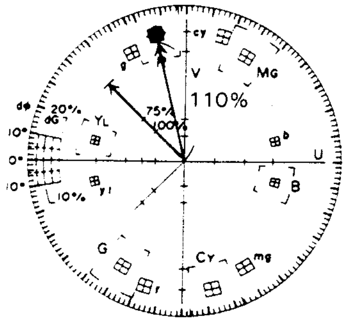
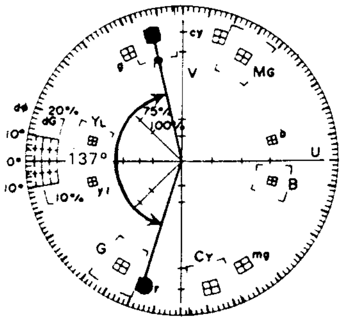
No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
1	Vertical enhancer balance	•Gray scale	•TP6 (V. EDGE SIGNAL OUT) $\boxed{1}\boxed{1}$ VIDEO	•R358 (1H DELAYED SIG LEVEL) $\boxed{1}\boxed{2}$ SSG	1) Pick up the center portion of the gray scale pattern and observe the waveform at TP6. 2) Adjust R358 to minimize average level of the waveform.
			 Fig. 3-2-1 Vertical enhancer balance		
2	Iris	•Gray scale	•CN-V1 pin 10 (Y OUT) $\boxed{1}\boxed{1}$ VIDEO	•R91 (IRIS) $\boxed{1}\boxed{3}$ AF	1) Pick up the gray scale pattern with just scan and observe the waveform at pin 10 of CN-V1 on the VIDEO board. 2) Adjust R91, for 0.7 Vp-p video level.
			 Fig. 3-2-2 Y level (CAMERA OUT)		
3	Hole element	•Lens closed	•TP1 (HOLE-ELEMENT DC OUT) 13 AF	•R110 (GAIN) 13 AF •R107 (OFF-SET) 13 AF	1) Close the lens with the cap. 2) Connect a DC voltmater between TP1 and GND. 3) Adjust R110 for $4.0\pm^{0}_{0.2}$ V DC. 4) Connect jump wire between pin 4 and pin 3 of CN-A8 on the AF board. 5) Adjust R107 for $1.0\pm^{0.2}_{0}$ V DC. 6) Disconnect jump wire. 7) Repeat the above steps 3) through 6) twice.

3.3 COLOR CIRCUIT

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
1	R/B Separation	•Color bar	•TP2 (B) •CN-V1 pin 10 (Y. OUT) (Ext. trigger) $\boxed{1}\boxed{1}$ VIDEO  Highe Level W W Low Level Ye R Red Line Blue Line H. Rate Fig. 3-3-1 EE Y level (CAMERA OUT)	•R343 (R/B SEPA) $\boxed{1}\boxed{2}$ SSG	1) Pick up the color bar pattern and observe the waveform at TP2. 2) When pin 10 of CN-V1 on the VIDEO board is swept with external trigger and the oscilloscope is set to HOLD OFF mode, observe only the blue line. 3) Adjust R343 to equalize levels of yellow and red. **Note:** Blue line means a line in which white level is lower than another line.
2	Encoder balance	•White pattern •Jump wire	•Vectorscope  cy R V MG 20% 75% 100% YL 10° 0° 10° 10% yl b U B G CY mg r Fig. 3-3-2 Encoder balance	•R69 (B ENCODER BAL) •R68 (R ENCODER BAL) $\boxed{1}\boxed{1}$ VIDEO	1) Pick up the white pattern and short pin 4 of CN-A8 and pin 2 of CN-A1 on the AF board with shorting wire in order to open IRIS. 2) Adjust R69 and R68 to center every dot on the vectorscope alternately.
3	Color difference offset	•Lens closed	•Vectorscope  cy R V MG 20% 75% 100% YL 10° 0° 10° 10% yl b U B G CY mg r Fig. 3-3-3 Color difference off set	•R76 (COLOR DIF OFF SET) $\boxed{1}\boxed{1}$ VIDEO	1) Close the lens with the cap. 2) Adjust R76 to center every dot on the vectorscope alternately.

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
4	Color difference balance	•Color bar	•Vectorscope  Fig. 3-3-4 Color difference balance	•R347 (CD BALANCE) 1 2 SSG	1) Pick up the color bar pattern with just scan. 2) Adjust R347 so that dots meet with each other at the same point on the vectorscope.
5	CNR balance	•Color bar	•TP3 (COLOR NOISE) 1 1 VIDEO  Fig. 3-3-5 Noise suppressor balance	•R351 (CNR BAL) 1 2 SSG	1) Pick up the color bar pattern and observe waveform at TP3. 2) Adjust R351 to obtain a symmetric waveform as indicated in the figure.

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
6	White balance	•Gray scale •C4 filter	•TP8 (VIDEO OUT) 0 2 Y/C  Fig. 3-3-6 White balance-1 ↓ 2)  Fig. 3-3-7 White balance-2 ↓ 3)  Fig. 3-3-8 White balance-3	•R48 (B SET UP) •R49 (R SET UP) •R135 (B LEVEL) •R138 (R LEVEL) 1 1 VIDEO	1) Attach a C4 cold filter to the camera lens and pick up the gray scale pattern with just scan and observe waveform at TP8. 2) Adjust R48 and R49 alternately to minimize carrier leakage in the low level. 3) Adjust R135 and R138 alternately to minimize carrier leakage in the high level. 4) Repeat the above steps 2) and 3) to minimize carrier leakage. 5) Use a vectorscope and a TV monitor to confirm that carrier leakage is minimized.
7	Auto white	•Gray scale •C4 filter	•Vectorccope  Fig. 3-3-9 Auto white	•R141 (B AW OFFSET) •R140 (R AW OFFSET) 1 1 VIDEO	1) Attach a C4 cold filter to the camera lens and pick up the gray scale pattern. 2) Adjust R141 and R140 alternately so that every dot centers on the vectorscope.

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
8	Burst level	•Lens closed	•CN-V1 pin 20 (C OUT) $\boxed{1}\boxed{1}$ VIDEO	•R43 (BURST LEVEL) $\boxed{1}\boxed{1}$ VIDEO	1) Close the lens with the cap. 2) Connect the oscilloscope to pin 20 of CN-V1 on the VIDEO board and adjust R43 for 0.30 Vp-p burst level.
		 Fig. 3-3-10 Burst level (CAMERA OUT)			
9	Burst phase	•Color bar	•Vectorscope	•R39 (BURST PHASE) $\boxed{1}\boxed{1}$ VIDEO	1) Pick up the color bar pattern. 2) Adjust R39 so that burst phase difference becomes 90°
		 R MG YL 75% 100% 20% 90° U B G Cy 10% Fig. 3-3-11 Burst phase			
10	Color level	•Color bar •C4 filter	•Vectorscope	•R37 (COLOR LEVEL $\boxed{1}\boxed{1}$ VIDEO	1) Attach a C4 cold filter to the camera lens and pick up the color bar pattern with just scan. 2) Adjust R37 so that red level becomes 110% of burst level on the vectorscope.
		 110% MG YL 75% 100% 20% U B G Cy 10% Fig. 3-3-12 Color level			
11	Color phase	•Color bar •C4 filter	•Vectorscope	•R73 (B-Y LEVEL) $\boxed{1}\boxed{1}$ VIDEO	1) Attach a C4 cold filter to the camera lens and pick up the color bar pattern. 2) Adjust R73 so that phase difference between R and G is nearly at an angle of 137° on the vectorscope. **Note:** Pick up the skin color and confirm that reproduction of the color is normal. If necessary, use R73 and R39 for fine adjustment.
		 137° MG YL 75% 100% 20% U B G Cy 10% Fig. 3-3-13 Color phase			

3.4 AUTO FOCUS ADJUSTMENT

3.4.1 Hooking up

Hooking up equipment as shown in Fig. 3-4-1 so that distance from the lens is either infinity (∞) or 2±0.06 m exactly.

Connector	No. of Pin	Connection
ⓐ	4 pin	13 AF CN-A8 ↔ Zoom switch
ⓑ	20 pin	11 VIDEO CN-V1 ↔ 01 MAIN CN61
ⓒ	5 pin	01 MAIN CN11 ↔ Trigger switch
ⓓ	18 pin	01 MAIN CN51 ↔ Operation unit
ⓔ	6 pin	11 VIDEO CN-V6 ↔ 14 CTL CN401

Table 3-4-1 Destination of patch cords.

Note: Using camera holder insert the lens portion to the ring of the holder tightly as shown in Figure.

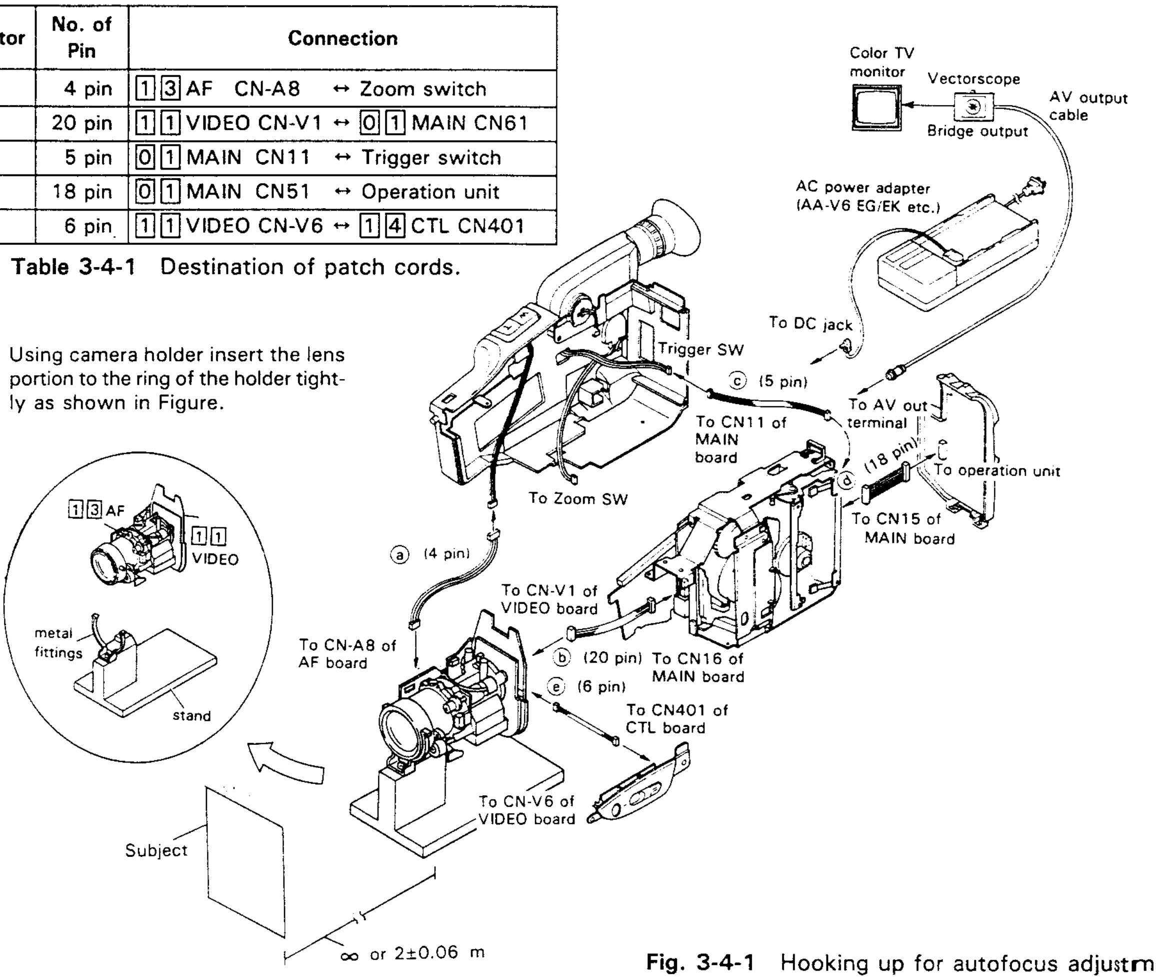

Color TV monitor
Vectorscope
AV output cable
Bridge output
AC power adapter (AA-V6 EG/EK etc.)
To DC jack
Trigger SW
ⓒ (5 pin)
To CN11 of MAIN board
To AV out terminal
ⓓ (18 pin)
To operation unit
To CN15 of MAIN board
To Zoom SW
ⓐ (4 pin)
To CN-V1 of VIDEO board
To CN-A8 of AF board
ⓑ (20 pin) To CN16 of MAIN board
ⓔ (6 pin)
To CN401 of CTL board
To CN-V6 of VIDEO board
13 AF
11 VIDEO
metal fittings
stand
Subject
∞ or 2±0.06 m

Fig. 3-4-1 Hooking up for autofocus adjustment

In addition, make the following connections prior to adjusting autofocus.
Connection locations all indicate those on the AF board. Turn off the power before connecting patch cords.

pin 3 of CN-A8	↔ TP GND on the adjustment tool
pin 13 of CN-A3	↔ TP 5V on the adjustment tool
pin 3 of IC1	↔ TP A on the adjustment tool
pin 2 of IC1	↔ TP B on the adjustment tool
pin 50 of IC7	↔ TP GND on the adjustment tool

Table 3-4-2

Note: Autofocus adjustment tool;

Master lens drive SW (1 push 1 pulse) ______ SW1: Output signal to TPA (Macro to Infinity)
SW2: Output signal to TPB (Infinity to Macro)

SW3: Select switch for CPU ______ C mode: UPD78C14AG-043
D mode: MN1888JWT

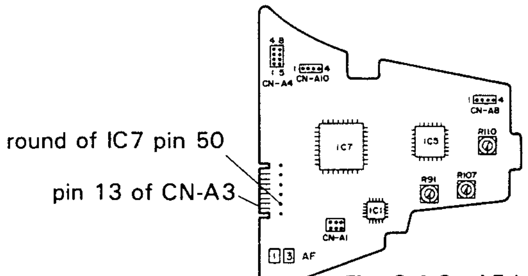
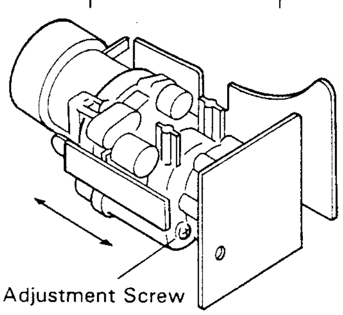
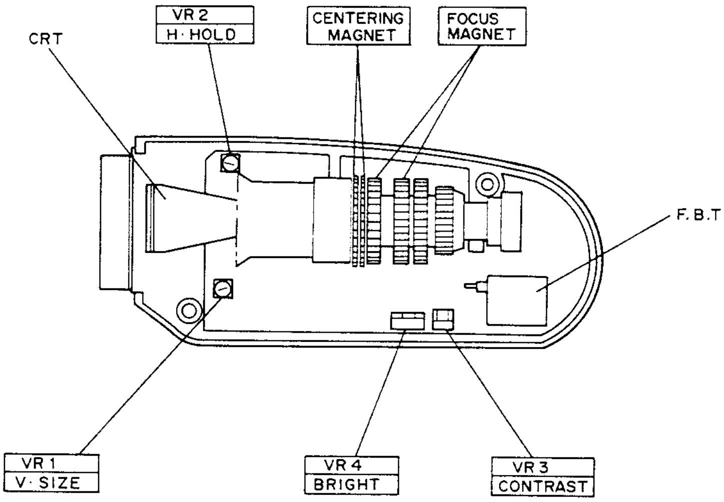
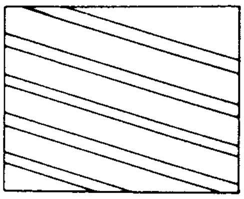
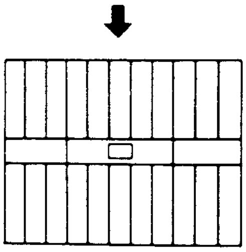

round of IC7 pin 50
pin 13 of CN-A3
CN-A4
CN-A10
CN-A8
IC7
IC5
R110
R91
R107
IC1
CN-A1
13 AF

Fig. 3-4-2 AF board

3.4.2 Autofocus

No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
1	Confirmation	•EE	•Monitor TV		1) Pick up a subject at a distance of 50 m or more and confirm the subject is in focus. Voltage at pin-3 of CN-A10 should be 2.35±0.10 V. 2) With fully Tele mode, when changing a distance of a subject from approx. 5 m to approx 30 cm, focusing time should be within approx 8 seconds.
2A	Autofocus	•EE •50 m or more distance •ND Filter •ZOOM SW: TELE Mode	•CN-A10 pin 3 (PHOTO TR IN) $\boxed{1}$ $\boxed{3}$ AF  Fig. 3-4-1 Autofocus adjustment screw	•Autofocus screw	1) Pick up a subject at a distance of 50 m or more. 2) Put the ND filter to the lens to open IRIS. **Note:** If Iris is open, pin 4 of CN-A4 on the AF board must be high level. 3) Push the zoom button to fully TELE mode. 4) While observing the picture on the TV monitor, operate the autofocus adjustment tool for just focus. 5) Turn the adjusting screw on the infinity sensor for 2.35±0.10 VDC at pin 3 of CN-A10. 6) After No. 1 confirmation, put glue to the adjusting screw to fix it.
2B	Simplified method for autofocus	•EE •2±0.06 m distance •ND Filter •ZOOM SW: TELE Mode	•CN-A10 pin 3 (PHOTO TR IN) $\boxed{1}$ $\boxed{3}$ AF	•Auto focus screw	1) Pick up a subject at a distance of 2±0.06 m. 2) Put the ND filter to the lens to open IRIS. **Note:** If Iris is open, pin 4 of CN-A4 on the AF board must be high level. 3) Push the zoom button to fully TELE mode. 4) While observing the picture on the TV monitor, operate the autofocus adjustment tool for just focus. 5) Select SW1 to A mode and push SW2 4-8 times. 6) Turn the adjusting screw on the infinity sensor for 2.35±0.10 VDC at pin 3 of CN-A10. 7) After No. 1 confirmation, put glue to the adjusting screw to fix it.

3.5 ELECTRONIC VIEWFINDER

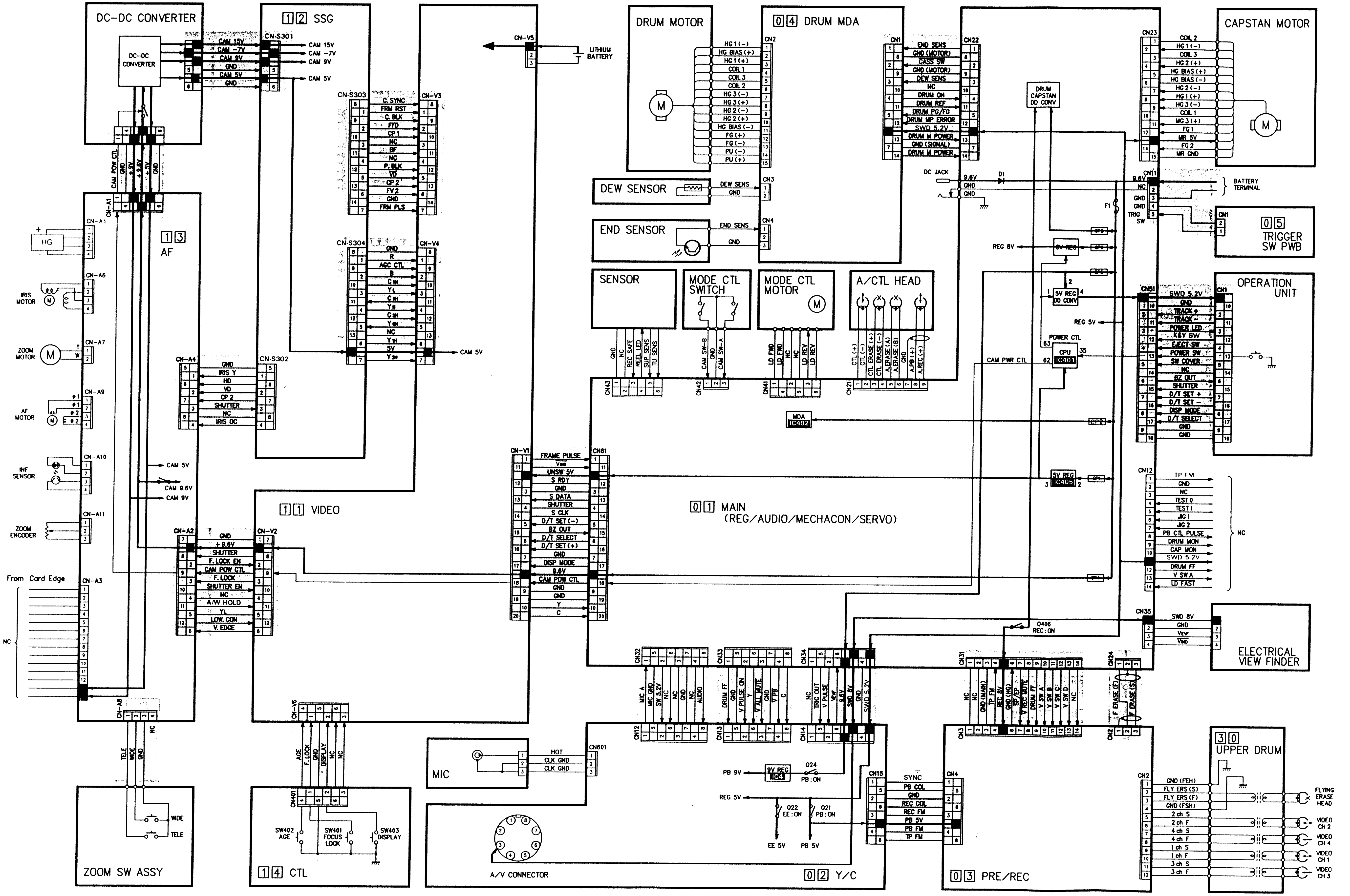
No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
1	Horizontal frequency  CRT VR 2 H·HOLD CENTERING MAGNET FOCUS MAGNET F.B.T VR 1 V·SIZE VR 4 BRIGHT VR 3 CONTRAST Fig. 3-5-1 VF VR position	•Gray scale or Monoscope	•View finder screen	•VR2 (H. HOLD) 50 VF board	1) While observing the view finder screen, turn VR2 full in a clockwise direction to cause the screen to flow. 2) Slowly turn VR2 in the opposite direction and observe the point where the screen stops. Make a mark on the position on the VR where the screen stops so that you will remember it. 3) Next, turn VR2 all the way in a counter-clockwise direction to cause the screen to flow in the same way as in step (1). 4) Slowly turn VR2 in the opposite direction and observe the point where the screen stops. 5) Set at a point midway between the two points where the screen stopped during adjustment.  (a) H. Frequency-1  (b) The correct value is one where the DC value for IC1-12 pin equals 3.0 V. Fig. 3-5-2 H. Frequency-2
2	Vertical scanning	•Gray scale or Monoscope	•View finder screen	•VR1 (V. SIZE) 50 VF board	1) While ovserving the view finder screen adjust VR1 to obtain proper V-height.
3	Centering	•Gray scale or Monoscope	•View finder screen	•Centering magnet	1) Pick up the gray scale so that it comes to the middle area of the screen and then adjust the centering magnet so that the gray scale comes to the center of the view finder screen.
4	Focus	•Gray scale or Monoscope	•View finder screen	•Focus magnet	1) While observing the view finder screen, adjust the focus magnet for the deflecting yoke so that the image in the central area of the gray scale screen is clear and defined.
5	Brightness	•Lens closed	•View finder screen	•VR4 (BRIGHT) 50 VF board	1) With lens caped, adjust VR4 so that the CRT raster of the view finder can be dimly seen.
6	Contrast	•Gray scale	•View finder screen	•VR3 (CONT) 50 VF board	1) While observing the view finder screen, adjust VR3 so that the gray scale gradation is optimum.

SECTION 4
OVERALL WIRING AND BLOCK DIAGRAMS

4.1 OVERALL WIRING AND POWER SYSTEM BLOCK DIAGRAM

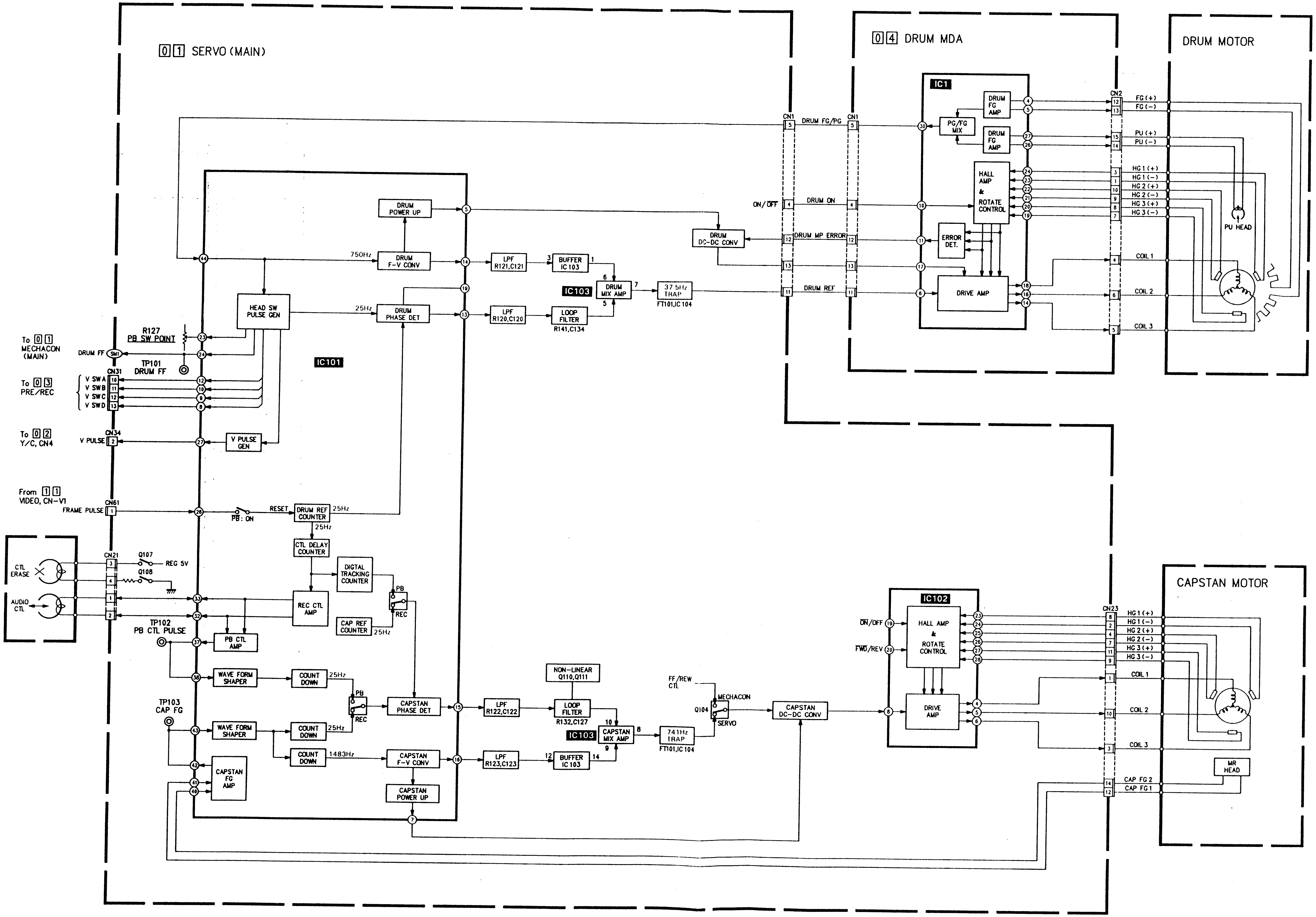
Note: The red lines indicate the power flow.

Patchcords
Patchcords are available for blue shaded portions of the overall wiring.
The patchdords are provided with tags to indicate connection points. Connect as indicated.



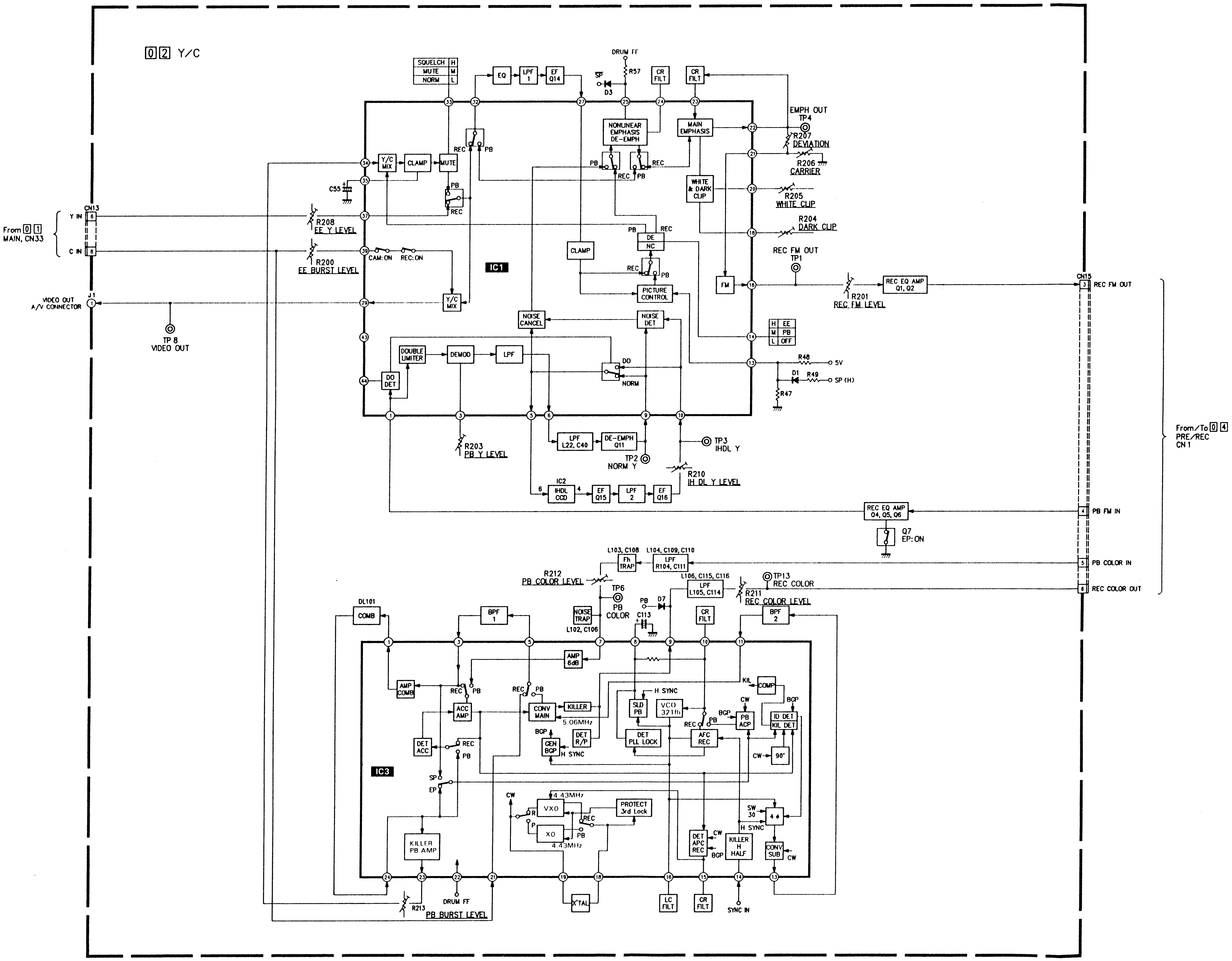
DC-DC CONVERTER
DC-DC CONVERTER
CAM 15V
CAM -7V
CAM 9V
GND
CAM 5V
GND
12 SSG
CN-S301
CAM 15V
CAM -7V
CAM 9V
CAM 5V
CN-V5
LITHIUM BATTERY
CN-S303
C. SYNC
FRM RST
C. BLK
FFD
CP 1
NC
BF
NC
P. BLK
VD
CP 2
FV 2
GND
FRM PLS
CN-V3
CN-S304
GND
R
AGC CTL
B
CN-V4
CAM 5V
CN-S302
CN-A4
GND
IRIS Y
HD
VD
CP 2
SHUTTER
NC
IRIS OC
CAM POW CTL
GND
+9.6V
+9.6V
+5V
GND
CN-A1
13 AF
CN-A5
HG
CN-A6
IRIS MOTOR
CN-A7
ZOOM MOTOR
CN-A9
AF MOTOR
CN-A10
INF SENSOR
CAM 5V
CAM 9.6V
CAM 9V
CN-A11
ZOOM ENCODER
From Card Edge
CN-A3
NC
CN-A2
CN-V2
GND
+9.6V
SHUTTER
F. LOCK EN
CAM POW CTL
F. LOCK
SHUTTER EN
NC
A/W HOLD
YL
LOW. CON
V. EDGE
11 VIDEO
CN-A8
TELE
WIDE
GND
NC
ZOOM SW ASSY
WIDE
TELE
CN-V6
AGE
F. LOCK
GND
DISPLAY
NC
NC
CN401
SW402 AGE
SW401 FOCUS LOCK
SW403 DISPLAY
14 CTL
CN-V1
CN61
FRAME PULSE
VDD
UNSW 5V
S RDY
GND
S DATA
SHUTTER
S CLK
D/T SET (-)
BZ OUT
D/T SELECT
D/T SET (+)
GND
DISP MODE
9.6V
CAM POW CTL
GND
GND
Y
C
01 MAIN
(REG/AUDIO/MECHACON/SERVO)
MIC
HOT
CLK GND
CLK GND
CN601
A/V CONNECTOR
02 Y/C
DRUM MOTOR
04 DRUM MDA
HG 1 (-)
HG BIAS (+)
HG 1 (+)
COIL 1
COIL 3
COIL 2
HG 3 (-)
HG 3 (+)
HG 2 (-)
HG 2 (+)
HG BIAS (-)
FG (+)
FG (-)
PU (-)
PU (+)
CN2
CN1
END SENS
GND (MOTOR)
CASS SW
GND (MOTOR)
DEW SENS
NC
DRUM ON
DRUM REF
DRUM PG/FG
DRUM MP ERROR
SWD 5.2V
DRUM M POWER
GND (SIGNAL)
DRUM M POWER
CN22
DEW SENSOR
DEW SENS
GND
CN3
END SENSOR
END SENS
GND
CN4
DRUM CAPSTAN DD CONV
CN23
COIL 2
HG 1 (-)
COIL 3
HG 2 (+)
HG BIAS (+)
HG BIAS (-)
HG 2 (-)
HG 1 (+)
HG 3 (-)
COIL 1
HG 3 (+)
FG 1
MR 5V
FG 2
MR GND
CAPSTAN MOTOR
DC JACK
9.6V
GND
GND
D1
F1
CN11
9.6V
NC
GND
GND
TRIG SW
BATTERY TERMINAL
CN1
05 TRIGGER SW PWB
REG 8V
5V REG
SENSOR
GND
NC
REC SAFE
REEL LED
SUP SENS
TU SENS
CN43
MODE CTL SWITCH
CAM SW-B
GND
CAM SW-A
CN42
MODE CTL MOTOR
LD FWD
LD FWD
NC
NC
LD REV
LD REV
CN41
A/CTL HEAD
CTL (+)
CTL (-)
CTL ERASE (+)
CTL ERASE (-)
A.ERASE (A)
A.ERASE (B)
A.PB (+)
A.REC (+)
CN21
5V REG DD CONV
REG 5V
POWER CTL
CPU IC401
CAM PWR CTL
MDA IC402
5V REG IC405
CN51
SWD 5.2V
GND
TRACK +
TRACK -
POWER LED
KEY SW
EJECT SW
POWER SW
SW COVER
NC
BZ OUT
SHUTTER
D/T SET +
D/T SET -
DISP MODE
D/T SELECT
GND
GND
OPERATION UNIT
CN12
TP FM
GND
NC
TEST 0
TEST 1
JIG 1
JIG 2
PB CTL PULSE
DRUM MON
CAP MON
SWD 5.2V
DRUM FF
V SWA
LD FAST
NC
CN35
SWD 8V
GND
VEW
VDD
Q406 REC:ON
ELECTRICAL VIEW FINDER
CN32
MIC A
MIC GND
SW 5.2V
NC
NC
GND
GND
AUDIO
CN33
DRUM FF
GND
V PULSE ON
Y
V ALL MUTE
GND
V PB
C
CN34
NC
TRIG OUT
V PULSE
VEW
9.6V
GND
SWD 5.2V
CN12
CN13
CN14
PB 9V
9V REG IC4
Q24 PB:ON
REG 5V
Q22 EE:ON
Q21 PB:ON
EE 5V
PB 5V
CN15
SYNC
PB COL
GND
REC COL
REC FM
PB 5V
PB FM
TP FM
CN4
CN31
NC
GND (MAIN)
TP FM
REC 8V
GND (HG)
SP/EP
V REC MUTE
DRUM FF
V SW A
V SW B
V SW C
V SW D
NC
CN3
CN24
F ERASE (F)
F ERASE (S)
CN2
03 PRE/REC
30 UPPER DRUM
CN2
GND (FEH)
FLY ERS (S)
FLY ERS (F)
GND (FSH)
2ch S
2ch F
4ch S
4ch F
1ch S
1ch F
3ch S
3ch F
FLYING ERASE HEAD
VIDEO CH 2
VIDEO CH 4
VIDEO CH 1
VIDEO CH 3

4.2 SERVO (MAIN) BLOCK DIAGRAM

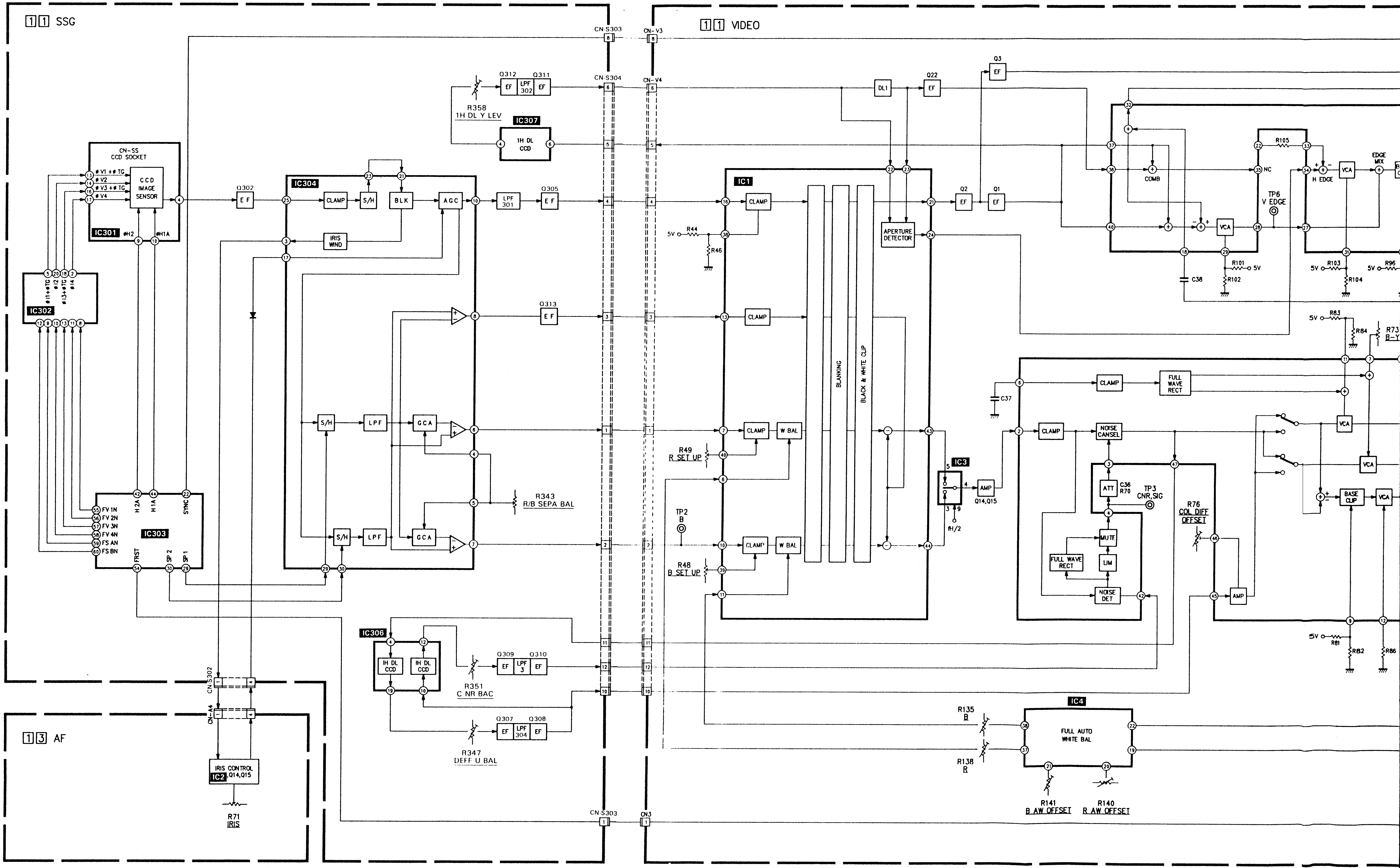


01 SERVO (MAIN)
04 DRUM MDA
DRUM MOTOR
CAPSTAN MOTOR
IC101
IC103
IC102
IC1
DRUM POWER UP
DRUM F-V CONV
750Hz
DRUM PHASE DET
25Hz
HEAD SW PULSE GEN
V PULSE GEN
LPF R121,C121
LPF R120,C120
BUFFER IC103
LOOP FILTER R141,C134
DRUM MIX AMP
37.5Hz TRAP FT101,IC104
DRUM DC-DC CONV
CN1
DRUM FG/PG
ON/OFF
DRUM ON
DRUM MP ERROR
DRUM REF
DRUM FG AMP
PG/FG MIX
HALL AMP & ROTATE CONTROL
ERROR DET.
DRIVE AMP
CN2
FG (+)
FG (−)
PU (+)
PU (−)
HG 1 (+)
HG 1 (−)
HG 2 (+)
HG 2 (−)
HG 3 (+)
HG 3 (−)
COIL 1
COIL 2
COIL 3
PU HEAD
To 01 MECHACON (MAIN)
DRUM FF
R127 PB SW POINT
TP101 DRUM FF
To 03 PRE/REC
CN31
V SWA
V SWB
V SWC
V SWD
To 02 Y/C, CN4
CN34
V PULSE
From 01 VIDEO, CN-V1
CN61
FRAME PULSE
RESET
PB: ON
DRUM REF COUNTER
CTL DELAY COUNTER
DIGITAL TRACKING COUNTER
CN21
Q107
REG 5V
Q108
CTL ERASE
AUDIO CTL
REC CTL AMP
PB
REC
CAP REF COUNTER
TP102 PB CTL PULSE
PB CTL AMP
WAVE FORM SHAPER
COUNT DOWN
1483Hz
TP103 CAP FG
CAPSTAN PHASE DET
CAPSTAN F-V CONV
CAPSTAN FG AMP
CAPSTAN POWER UP
LPF R122,C122
LPF R123,C123
NON-LINEAR Q110,Q111
LOOP FILTER R132,C127
CAPSTAN MIX AMP
741Hz TRAP FT101,IC104
FF/REW CTL
Q104
MECHACON
SERVO
CAPSTAN DC-DC CONV
ON/OFF
FWD/REV
CN23
MR HEAD
CAP FG 2
CAP FG 1

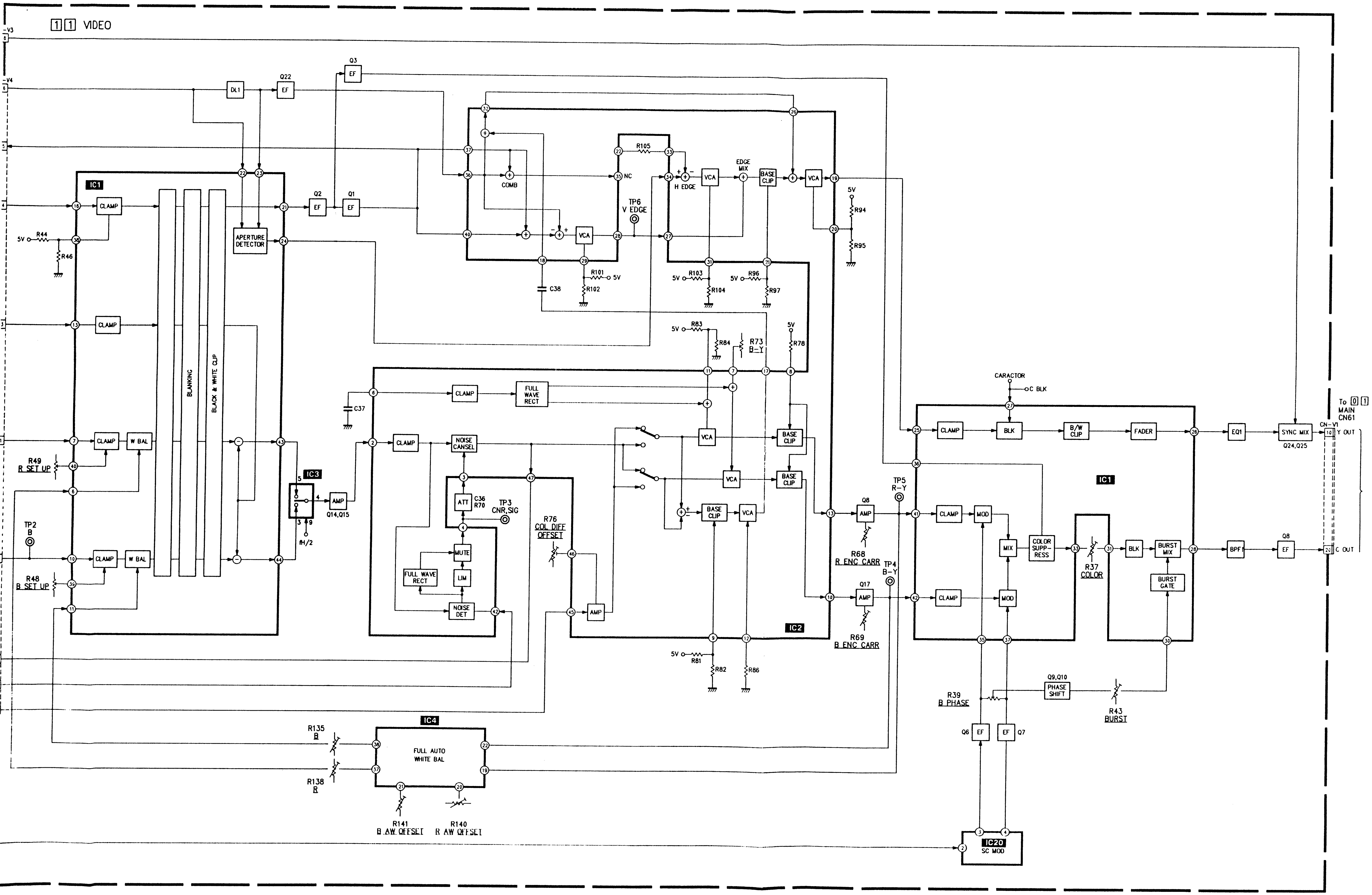
4.3 Y/C BLOCK DIAGRAM


02 Y/C
SQUELCH H
MUTE M
NORM L
EQ
LPF 1
EF Q14
DRUM FF
R57
SP
D3
CR FILT
CR FILT
NONLINEAR EMPHASIS DE-EMPH
MAIN EMPHASIS
EMPH OUT TP4
R207 DEVIATION
R206 CARRIER
R205 WHITE CLIP
R204 DARK CLIP
WHITE & DARK CLIP
REC FM OUT TP1
Y/C MIX
CLAMP
MUTE
REC
PB
C55
CN13
Y IN
C IN
From 01 MAIN, CN33
R208 EE Y LEVEL
R200 EE BURST LEVEL
CAM:ON REC:ON
IC1
VIDEO OUT A/V CONNECTOR
J1
TP 8 VIDEO OUT
Y/C MIX
DE NC
CLAMP
PICTURE CONTROL
NOISE CANCEL
NOISE DET
FM
REC EQ AMP Q1, Q2
R201 REC FM LEVEL
CN15
REC FM OUT
H EE
M PB
L OFF
R48 5V
D1 R49 SP (H)
R47
DOUBLE LIMITER
DEMOD
LPF
DO
NORM
DO DET
R203 PB Y LEVEL
LPF L22, C40
DE-EMPH Q11
TP2 NORM Y
TP3 IHDL Y
R210 IH DL Y LEVEL
IC2 IHDL CCD
EF Q15
LPF 2
EF Q16
From/To 04 PRE/REC CN1
REC EQ AMP Q4, Q5, Q6
PB FM IN
Q7 EP:ON
L103, C108
L104, C109, C110
Fh TRAP
LPF R104, C111
PB COLOR IN
R212 PB COLOR LEVEL
TP6 PB COLOR
L106, C115, C116
LPF L105, C114
TP13 REC COLOR
R211 REC COLOR LEVEL
REC COLOR OUT
DL101
COMB
BPF 1
NOISE TRAP
L102, C106
PB D7
C113
CR FILT
BPF 2
AMP 6dB
AMP COMB
ACC AMP
CONV MAIN
KILLER
5.06MHz
H SYNC
SLD PB
VCO 321fh
DET PLL LOCK
AFC REC
KIL
COMP
CW
BGP
PB ACP
ID DET
KIL DET
DET ACC
GEN BGP
DET R/P
CW 90°
IC3
SP
EP
4.43MHz
VXO
PROTECT 3rd Lock
XO
SW 30
4φ
DET APC REC
KILLER H HALF
CONV SUB
KILLER PB AMP
DRUM FF
R213 PB BURST LEVEL
X'TAL
LC FILT
CR FILT
SYNC IN

4.4 VIDEO AND SSG BLOCK DIAGRAMS



1 1 SSG
1 1 VIDEO
1 3 AF
CN-SS CCD SOCKET
CCD IMAGE SENSOR
IC301
φV1 +φTG
φV2
φV3 +φTG
φV4
φH2
φH1A
IC302
IC303
FV 1N
FV 2N
FV 3N
FV 4N
FS AN
FS BN
H 2A
H 1A
SYNC
FRST
SP 2
SP 1
Q302
E F
IC304
CLAMP
S/H
BLK
AGC
IRIS WIND
LPF
GCA
LPF 301
Q305
Q313
Q312
Q311
LPF 302
R358
1H DL Y LEV
IC307
1H DL CCD
R343
R/B SEPA BAL
IC306
1H DL CCD
Q309
Q310
LPF 3
R351
C NR BAC
Q307
Q308
LPF 304
R347
DEFF U BAL
IRIS CONTROL
IC2 Q14,Q15
R71
IRIS
CN-S302
CN-A4
CN-S303
CN-S304
CN-V3
CN-V4
CN3
IC1
5V
R44
R46
BLANKING
BLACK & WHITE CLIP
APERTURE DETECTOR
DL1
Q22
Q3
Q2
Q1
EF
W BAL
R49
R SET UP
R48
B SET UP
TP2
B
IC3
AMP
Q14,Q15
fH/2
C37
C38
COMB
R105
H EDGE
NC
VCA
EDGE MIX
TP6
V EDGE
R101
R102
R103
R104
R96
R83
R84
R73
CLAMP
FULL WAVE RECT
NOISE CANSEL
ATT
C36
R70
TP3
CNR,SIG
MUTE
LIM
NOISE DET
R76
COL DIFF OFFSET
BASE CLIP
R81
R82
R86
IC4
FULL AUTO WHITE BAL
R135
B
R138
R
R141
B AW OFFSET
R140
R AW OFFSET


1 1 VIDEO
IC1
CLAMP
APERTURE DETECTOR
BLANKING
BLACK & WHITE CLIP
W BAL
R44
R46
5V
R49 R SET UP
R48 B SET UP
TP2 B
DL1
Q22 EF
Q3 EF
Q2 EF
Q1 EF
IC3
AMP
Q14,Q15
fH/2
C37
IC2
CLAMP
FULL WAVE RECT
NOISE CANSEL
ATT
C36 R70
TP3 CNR,SIG
MUTE
LIM
FULL WAVE RECT
NOISE DET
R76 COL DIFF OFFSET
AMP
COMB
NC
R105
TP6 V EDGE
VCA
H EDGE
EDGE MIX
BASE CLIP
C38
R101
R102
R103
R104
R96
R97
R94
R95
R83
R84
R73 B-Y
R78
BASE CLIP
R81
R82
R86
Q8 AMP
R68 R ENC CARR
Q17 AMP
R69 B ENC CARR
TP5 R-Y
TP4 B-Y
IC4
FULL AUTO WHITE BAL
R135 B
R138 R
R141 B AW OFFSET
R140 R AW OFFSET
CARACTOR
C BLK
BLK
B/W CLIP
FADER
MOD
MIX
COLOR SUPP-RESS
R37 COLOR
BURST MIX
BURST GATE
Q9,Q10 PHASE SHIFT
R43 BURST
R39 B PHASE
Q6 EF
EF Q7
IC20 SC MOD
EQ1
SYNC MIX
Q24,Q25
BPF
Q8 EF
To 0 1 MAIN CN61
CN-V1
Y OUT
C OUT
V3
V4

ADDITION

3

MODEL **GR-A1EG/EK**

SECTION 5
CHARTS AND DIAGRAMS

SECTION 7
PARTS LIST

This is an addition to the No. 86088 Service Manual for the model GR-A1EG/EK.

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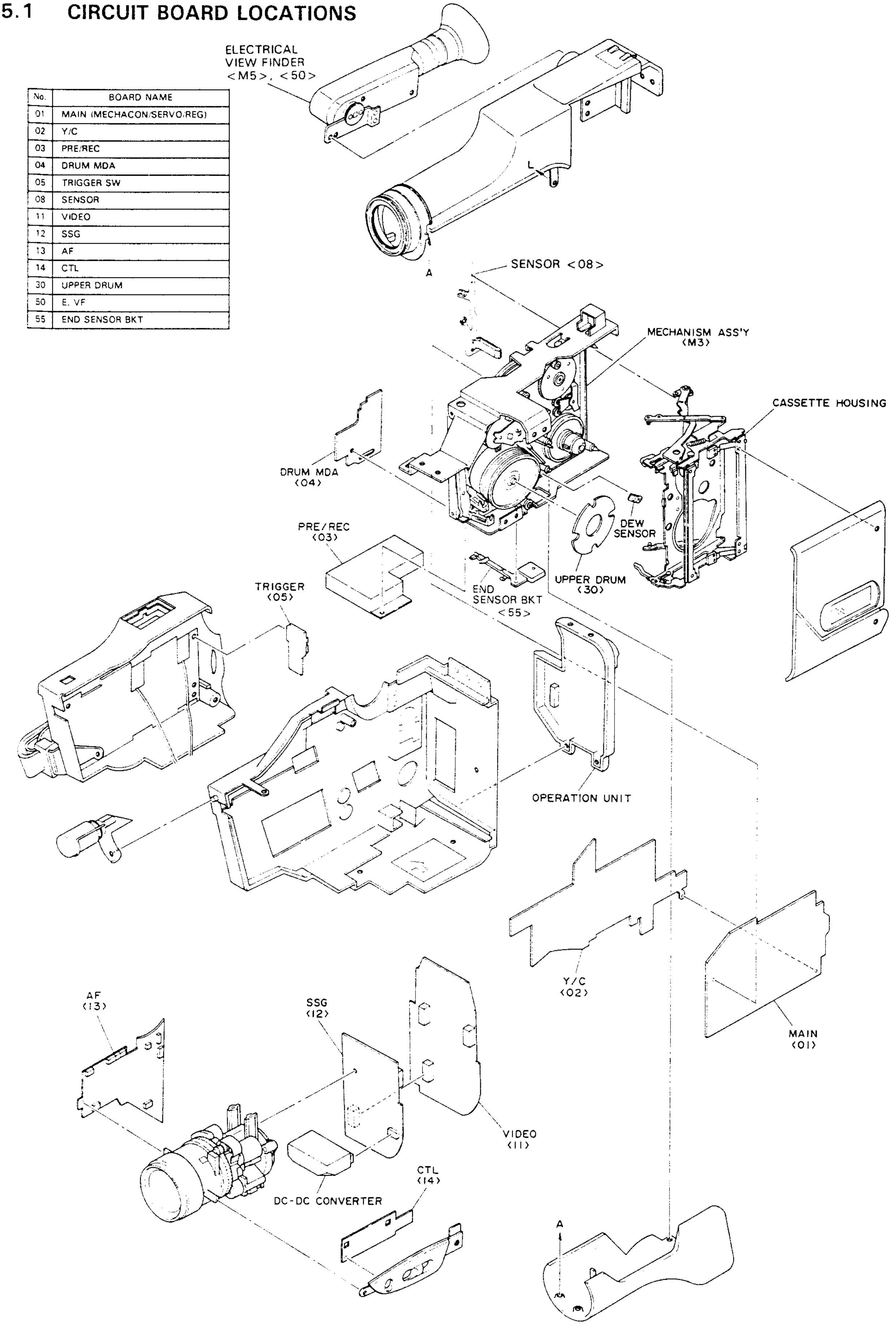
No. 86088B
July 1990

SECTION 5
CHARTS AND DIAGRAMS

5.1 CIRCUIT BOARD LOCATIONS

No.	BOARD NAME
01	MAIN (MECHACON/SERVO/REG)
02	Y/C
03	PRE/REC
04	DRUM MDA
05	TRIGGER SW
08	SENSOR
11	VIDEO
12	SSG
13	AF
14	CTL
30	UPPER DRUM
50	E. VF
55	END SENSOR BKT


ELECTRICAL VIEW FINDER <M5>, <50>
L
A
SENSOR <08>
MECHANISM ASS'Y (M3)
CASSETTE HOUSING
DRUM MDA (04)
DEW SENSOR
PRE/REC (03)
UPPER DRUM (30)
TRIGGER (05)
END SENSOR BKT <55>
OPERATION UNIT
Y/C (02)
MAIN (01)
AF (13)
SSG (12)
VIDEO (11)
CTL (14)
DC-DC CONVERTER
A

5.2 SCHEMATIC DIAGRM NOTES

1. ▨ parts are safety related parts. When replacing them, be sure to use the specified parts.

2. Voltage and waveform measurment condition

- **DECK**

Voltage : DC-measured with a digital voltmeter during recoding (SP mode) and play back (SP mode) with alignment tape. Where voltage differ between recoding and playback, the voltage during playback is shown in parenthese.

Waveform:

VIDEO System; Measured with a color bar during recording (SP mode) and play back (SP mode) with alignment tape.

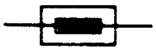
- **CAMERA**

Voltage/
Waveform : Measured as the grey scale pattern which lighted up brightly is shot in the Rehersal mode.

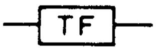
3. Unit indications

No units: [Ω]	No units: [μF]	No units: [μH]
K: [kΩ]	P: [pF]	m: [mH]
M: [MΩ]		

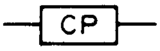
Thermistor



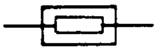
Thermal Fuse

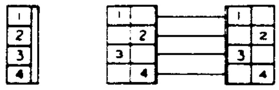


Circuit Protector

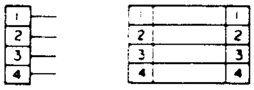


Posistor

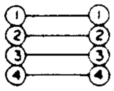




: Connector



: Board in connector

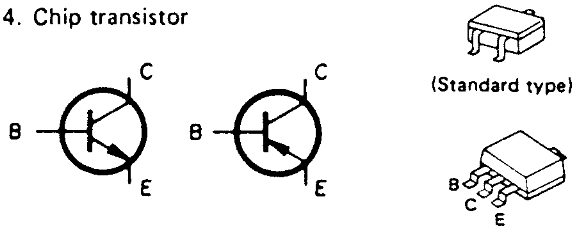


: Direct connection

COUNT UP : Active only at high.
$\overline{\text{COUNT DOWN}}$: Active only at low.

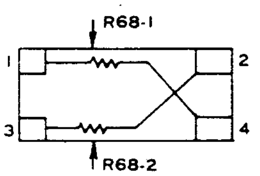
YA : Connected pattern in the board.
MS Abbreviations
SM Y : Y/C M : Mechacon
S : Servo A : Audio
MS : Signal flow from mechacon to servo.

4. Chip transistor



5. Double chip resistors

These devices contain two resistance elements of differing values. In the example shown in the figure, R68 is comprised of R68-1 between terminals 1 and 4, and R68-2 between terminals 2 and 3.

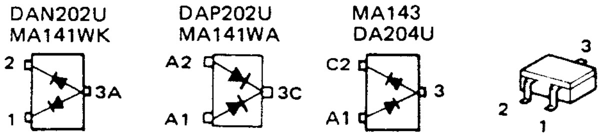


R68 PU59735-472Y103

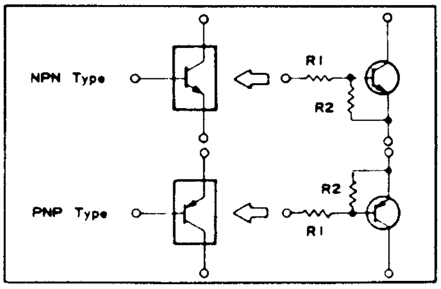
472 indicates 4.7 kΩ for R68-1
103 indicates 10 kΩ for R68-2

As can be noted from the figure, left-right reversal of the device does not change the connection values. However, turning the device upside-down will result in incorrect connectin.

6. Chip diode



7. Digital transistor



RESISTOR VALUES

JUNCTION	Part No.	R1 (kΩ)	R2 (kΩ)
PNP	DTA124EU	22	22
NPN	DTC144EU	47	47
	DTC124EU	22	22

Note: The digital transistor includes built in resistors.
It features small size and high reliability.
Both PNP and NPN types are available.

USES: INVERTER, INTERFACE, DRIVER CIRCUITS.

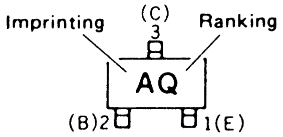
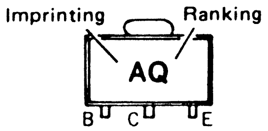
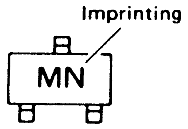
8. Definition of the surface and the back of circuit board diagrams
Front: Side on which discrete parts are assembled
Rear: Side on which chip parts are assembled

5.3 REPLACING SUBMINIATURE "CHIP" PARTS

1. Some resistors, shorting jumpers (0 Ω resistance), ceramic capacitors, transistors, and diodes are chip parts. These chip parts cannot be reused after they are once removed.
2. Additional compactness is achieved by using subminiature chip parts for certain circuit elements. When replacing these parts, note the cautions outlined below.

   Chip transistors and diodes used in this model are outlined as follows.

- **Chip transistor and chip diode imprinting**

Transistors				Diodes	
Type	Imprinting	Type	Imprinting	Type	Imprinting
DTA124EU	15	2SB798	DM, DL, DK	DAN202U	N
DTC124EU	25	2SC2412K(S)	BS	DAP202U	P
DTC144EU	26	2SC3931	UB~UD	DA204U	D14
DTC144WU	86	2SC3936(BC)	KB, KC	FMN1	N1
FMC2	C2	2SC4081	BQ~QS	IMN10	N10
FMG1	G1	2SC4098(PQ)	AP, AQ	MA141WA	MN
FMG2	G2	2SC4099(NP)	JN, JP	MA141WK	MT
FMU1	U1	2SC4176	B33, B34, B35	MA143	MC
FMW1	W1	2SC4177(56)	L5, L6	MA3075H	7.5H
FMW3	W3	2SC4178(34)	F13, F14	MA704	MIK
2SA1036K	HP~HR	2SD1819	YQ~YS	MA716	M1U
2SA1532(BC)	EB, EC	2SJ146	4D	RD7.5M-T1B2	752
2SA1576	FQ, FR	2SK198P,Q	10P, 10Q	RD7.5MB3	753
2SA1610	Y33, Y34	2SK620	3N	RD8.2MB2	822
2SA1611(56)	M5, M6	2SK665	30		
2SB1218(RS)	AR, AS	3SK179	V03		
2SB624	BV4, BV5				
 Imprinting (C) 3 Ranking AQ (B)2 1(E)		 Imprinting Ranking AQ B C E		 Imprinting MN	

Note ;( ) refers to Transistor rank.

5.4 KEY TO ABBREVIATIONS

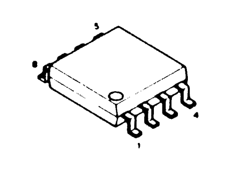
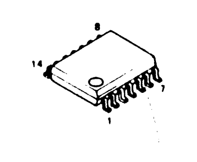
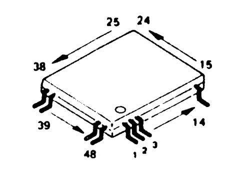
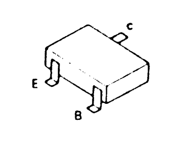
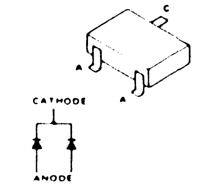
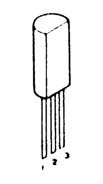
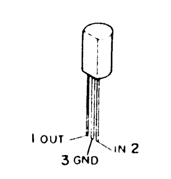
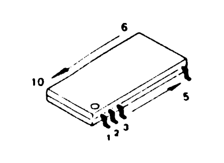
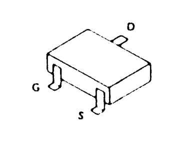
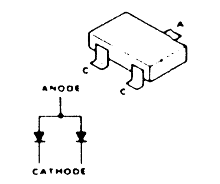
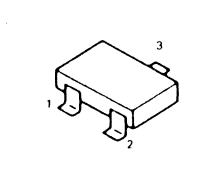
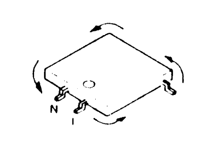
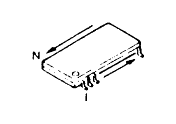
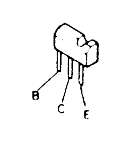
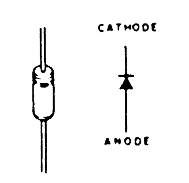
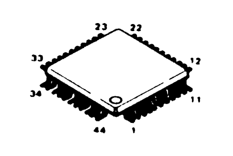
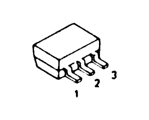
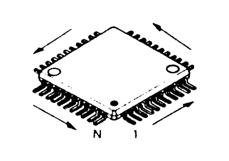
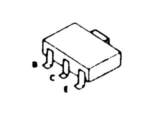
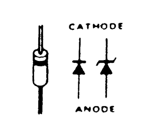
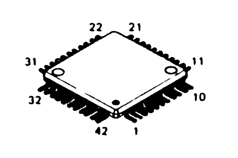
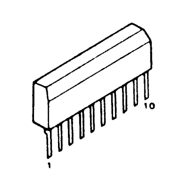
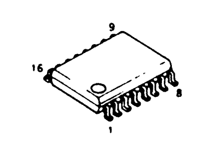
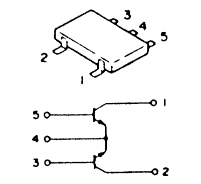
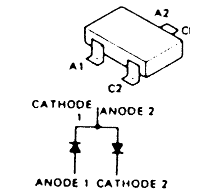
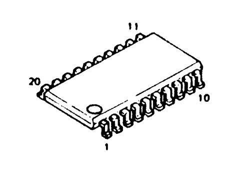
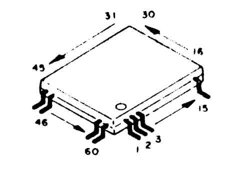
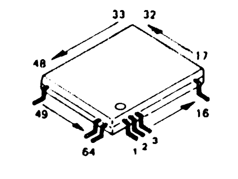
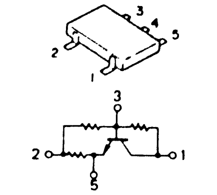
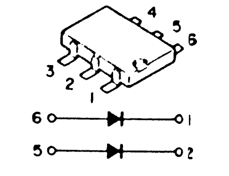
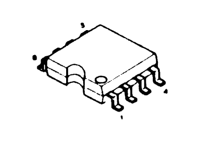
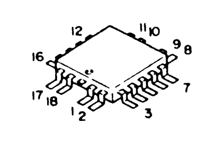
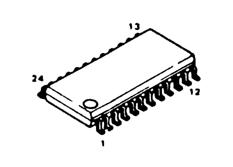
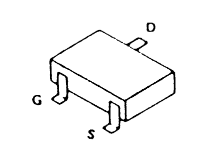
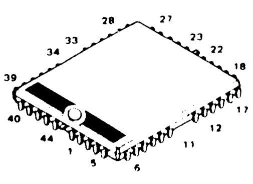
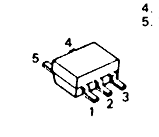
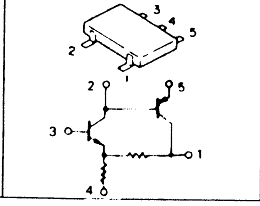
A	AC	: Alternating Current
	ACC	: Automatic Color Control
	A/CTL	: Audio/Control
	ADC	: Analog to Digital Converter
	ADD	: Adder
	ADJ	: Adjustment
	AE	: Audio Erase
	AEF	: Automatic Editing Function
	AF	**: Auto Focus**
	AFC	: Automatic Frequency Control
	AFT	: Automatic Fine Tuning
	AGC	: Automatic Gain Control
	AH	: Audio Head
	AL	**: After Loading, Allways**
	ALC	: Automatic Light Compensation Automatic Level Control
	ALM	: Alarm
	ALU	: Arithmetic Logic Unit
	AM	: Amplitude Modulation
	AMP	: Amplifier
	ANT	: Antenna
	APC	: Automatic Pedestal Control Automatic Phase Control
	APL	: Average Picture Level
	A S M	: Audio/Servo/Mechacon
	ASS'Y	: Assembly
	ATT	: Attenuator
	AUD	: Audio
	AUTO	: Automatic
	AUX	: Auxiliary
B	B	**: Base, Blue**
	BAL	: Balance
	BATT	: Battery
	BBD	: Bucket Brigade Device
	BCD	: Binary Coded Decimal
	BEG	: Beginning
	BF	**: Behind Focus**
	BFP	: Burst Flag Pulse
	BPF	**: Band Pass Filter**
	BIT	: Binary Digit
	BLK	: Black, Blanking
	BLU	: Blue
	BNC	: Bayonet Connector
	BOT	: Beginning of Tape
	BPF	: Bandpass Filter
	BRK	: Brake
	BRN	: Brown
	BRT	: Brightness
	BT	: Band Tuning
	BUFF	: Buffer
	BW or B W	: Black and White
C	C	**: Capacitance, Collector, Color, Character**
	CA	**: Camera**
	CAL	: Calibration
	CAP	: Capstan, Capacitor
	CAR	: Carrier
	CARR	: Carrier
	CASS	: Cassette
	CC	: Cassette Compartment
	CCD	: Charge Coupled Device
	CCT	: Circuit
	CdS	: Cadmium Sulphide
	CD	: Count Down
	CE	: Chip Enable
	CF	**: Ceramic Filter, Color Frame, Correct Focus**
	CH	: Channel
	CHG	: Charge
	CHROMA	: Chrominance
	CLK	: Clock
	CLR	: Clear
	CMD	: Command
	CMOS	: Complementary Metal Oxide Semiconductor
	CNT	: Count, Counter
	COL	: Color
	COM	: Common
	COMB	: Combination Comb Filter
	COMP	: Comparator Composite Compensation
	CONN	: Connector
	CONV	: Converter
	CP	: Circuit Protector Clamp Pulse
	CPC	: Capstan Phase Control
	CPU	: Central Processing Unit
	CTC	: Crosstalk Cancel
	CTL	: Control
D	D	: Drum, Digital, Diode, Drain
	DAC	: Digital to Analog Converter
	dB	: Decibel
	DC	: Direct Current
	DD	: Direct Drive
	DEC	: Decoder
	DEMOD	: Demodulator
	DEMUX	: Demultiplexer
	DET	: Detector
	DEV	: Deviation
	DFRS	: Drum Free Running Stop
	DG	: Differential Gain
	DIF	: Differential
	DISCR	: Discriminator
	DL	: Delay Line
	DOC	: Dropout Compensator
	DOD	: Drop Out Detector
	DP	: Differential Phase
	DPC	: Drum Phase Control
	DYAC	: Dynamic Aperture Control
E	E	: Edit, Emitter
	EDP	: Electronic Data Processing
	E E	: Electric to Electric
	EF	: Emitter Follower
	EMP	: Emphasis
	EN	: Enable
	ENC	: Encoder
	ENV	: Envelope
	EOT	: End of Tape
	EP	: Extended Play
	EQ	: Equalizer
	ES	: Electronic Switch
	ESNS	: End Sensor
	EXP	: Expander
	EXT	: External
F	F	: Farad, Fuse
	F ADV	: Frame Advance
	FDP	: Fluorescent Display Panel
	FE	: Full Erase
	FET	: Field Effect Transistor
	FF	**: Fast Forward, Front Focus** Flipflop
	FG	: Frequency Generator
	FM	: Frequency Modulation
	FR	: Full Recording, Frame, Fusible Resistor
	FREQ	: Frequency
	F V CONV	: Frequency to Voltage Converter
	FWD	: Forward
	FWD S	: Forward Search
G	G	: Green, Gate, Grid
	GEN	: Generator
	GND	: Ground
	GRN	: Green
	GRY	: Gray
H	H	: High, Henry, Hour
	HBF	: Horizontal Burst Flag
	HD	: Horizontal Drive
	HPF	: Highpass Filter
	Hz	: Herz
I	IC	: Integrated Circuit
	ID	: Identification (Pulse)
	IF	: Intermediate Frequency
	IFR	: Infrared
	IFT	: Intermediate Frequency Transformer
	IND	: Indicator
	INH	: Inhibit
	INS	: Insert
	INT	: Internal, Interrupt
	INV	**: Inverter, Interleave**
	I/O	: Input/Output
	IR	: Infrared
L	L	: Low, Left
	LCD	: Liquid Crystal Display
	LED	: Light Emitting Diode
	LIM	: Limiter
	LIN	: Linearity
	LLD	: Low Light Detector
	LOAD	: Loading (Cassette)
	LP	: Long Play
	LPF	: Lowpass Filter
	LSB	: Lower Sideband
M	M	: Motor, Mega
	MAX	: Maximum
	MDA	: Motor Drive Amplifier
	MECHACON	: Mechanism Control
	MIC	: Microphone
	MIN	: Minimum
	MIX	: Mixer, Mixing
	MMV	: Monostable Multivibrator
	MNOS	: Metal Nitride Oxide Semiconductor
	MOD	: Modulation, Modulator
	MODEM	: Modulator-Demodulator
	MON	: Monitor
	MOS	: Metal Oxide Semiconductor
	MPX	: Multiplexer, Multiplex
	MS	: Mode Select
	MUT	: Muting
N	NAND	: Not And
	NC	: Not Connected, Normally Closed
	NFB	: Negative Feedback
	NLN	: Non-Linear
	NO	: Normally Open
	NOR	: Normal, Not-Or
	NR	: Noise Reduction
O	OP	: Operation
	OPAMP	: Operational Amplifier
	ORG	: Orange
	OSC	: Oscillator
P	PB	: Playback
	PC	: Photocoupler, Pulse Counter
	PCM	: Pulse Code Modulation
	PG	: Pulse Generator
	PGM	: Program
	PI	: Photo Interrupter
	PIC	: Picture Control
	PIF	: Picture Intermediate Frequency
	PLA	: Programmable Logic Array
	PLL	: Phase Locked Loop
	PNK	: Pink
	POS	: Position
	p p	: Peak-to-Peak
	PR	: Pinch Roller
	PREAMP	: Preamplifier
	PRL	: Preroll
	P/S	: Pause/Still
	PSC	: Pulse Swallowing Control
	PU	: Pickup
	PUT	: Programmable Unijunction Transistor
	PWB	: Printed Wiring Board
	PWM	: Pulse Width Modulation
	PWR	: Power
Q	Q	: Quality Factor
R	R	: Red, Right
	RA	: Resistor Array
	RAM	: Random Access Memory
	REC	: Recording
	REF	: Reference
	REG	: Regulated, Regulator
	REM	: Remote
	REMOCON	: Remote Control (Unit)
	REV	: Reverse
	REV S	: Reverse Search
	REW	: Rewind
	RF	: Radio Frequency
	ROM	: Read Only Memory
	R/P	: Record/Playback
	RPT	: Repeat
	RS FF	: RS Flipflop
	RST	: Reset
	RT	: Rotary Transformer
	RUN	: Running
	RY	: Relay
S	SAW	: Sawtooth, Surface Acoustic Wave
	SC	: Subcarrier, Simulcast
	SCH	: Search
	SEL	: Select, Selector
	SENS	: Sensor
	SEP	: Separator
	SF	: Source Follower
	SFF	: Short Fast Forward
	SIF	: Sound Intermediate Frequency
	SN	: Signal to Noise Ratio
	SOL	: Solenoid
	SOS	: Sound on Sound
	SP	: Standard Play
	SR	: Supply Reel
	SREW	: Short Rewind
	S/S	: Slow/Still
	SSG	: Sync Signal Generator
	SSNS	: Start Sensor
	STD	: Strobe Data, Standard
	SUP	: Supply
	SW	: Switch
	SWD	: Switched
	SYNC	: Synchronization
T	TAL	: Tally
	TBC	: Time Base Corrector
	TC	: Tension Control, Time Code
	TEN	: Tension
	TF	: Thermal Fuse
	TIM	: Timing
	TK	: Tracking
	TNR	: Tuner
	TP	: Test Point
	TPZD	: Trapezoid
	TR	: Transistor, Trimmer
	TRANS	: Transformer
	TU	: Take-up
U	UL	: Unloading
	UNREG	: Unregulated
	UNSW	: Unswitched
V	V	: Vertical, Volt
	VACT	: Video Action
	VCO	: Voltage Controlled Oscillator
	VD	: Vertical Drive
	VIF	: Video Intermediate Frequency
	VLT	: Violet
	VR	: Variable Resistor
	VS	: Video and Sync
	VSCH	: Variable Search
	VV	: Video to Video
	VXO	: Variable Crystal Oscillator
W	W	: Watt
	WARN	: Warning
	W & D	: White and Dark
	WHT	: White
	WV	: Working Voltage
X	XTAL	: Crystal
Y	Y	: Luminance
	YEL	: Yellow

5.5 MAIN TYPES OF ACTIVE AND PACKAGE CIRCUITS

IC	NAME	L
A	AN1393S	1A
	AN8009	2B
B	BA10324F	1B
	BA7288K	4A
	BA7751AF	7C
	BU4052BF	5C
	BU4584BF	1B
H	HA118020MA	8A
	HA118025MP-XE	8A
	HA118118MA-XE	3B
	HA13475MP	7B
L	LA7316	7C
	LB1617M	3C
	LM2904E	1A
M	MN12821(QR)	3A
	MN1888JWT	
	MSM6844MS-XE	2C
	MSM6864MS-XE1	1A
	MS6964-3MS-XE1	1A
	MV1095	
	M5218FP	1A
	M5236ML	4B
	M54543ASL	5B
S	S-8052ANB-NE-X	4B
	S-8054HN	4B
	S-81252HG	2A
T	TA8713BF	3C
	TC4S66F	8B
	TC4S71F	8B
	TC4S81F	8B
	TC6025AF	6B
	TC7S00F	8B
	TC7S04F	8B
	TC7S32F	8B
U	UPC2371GH	1C
	UPC319G2	1B
	UPC324G2	1B
	UPC358G2	1A
	UPC393G2	1A
	UPD6147G	
	UPD6451GT-603	2C
	UPD75006GB-519	4C
V	VC2094A	4C
	VC2095	2C
	VC2524	4C
	VC5035	3C

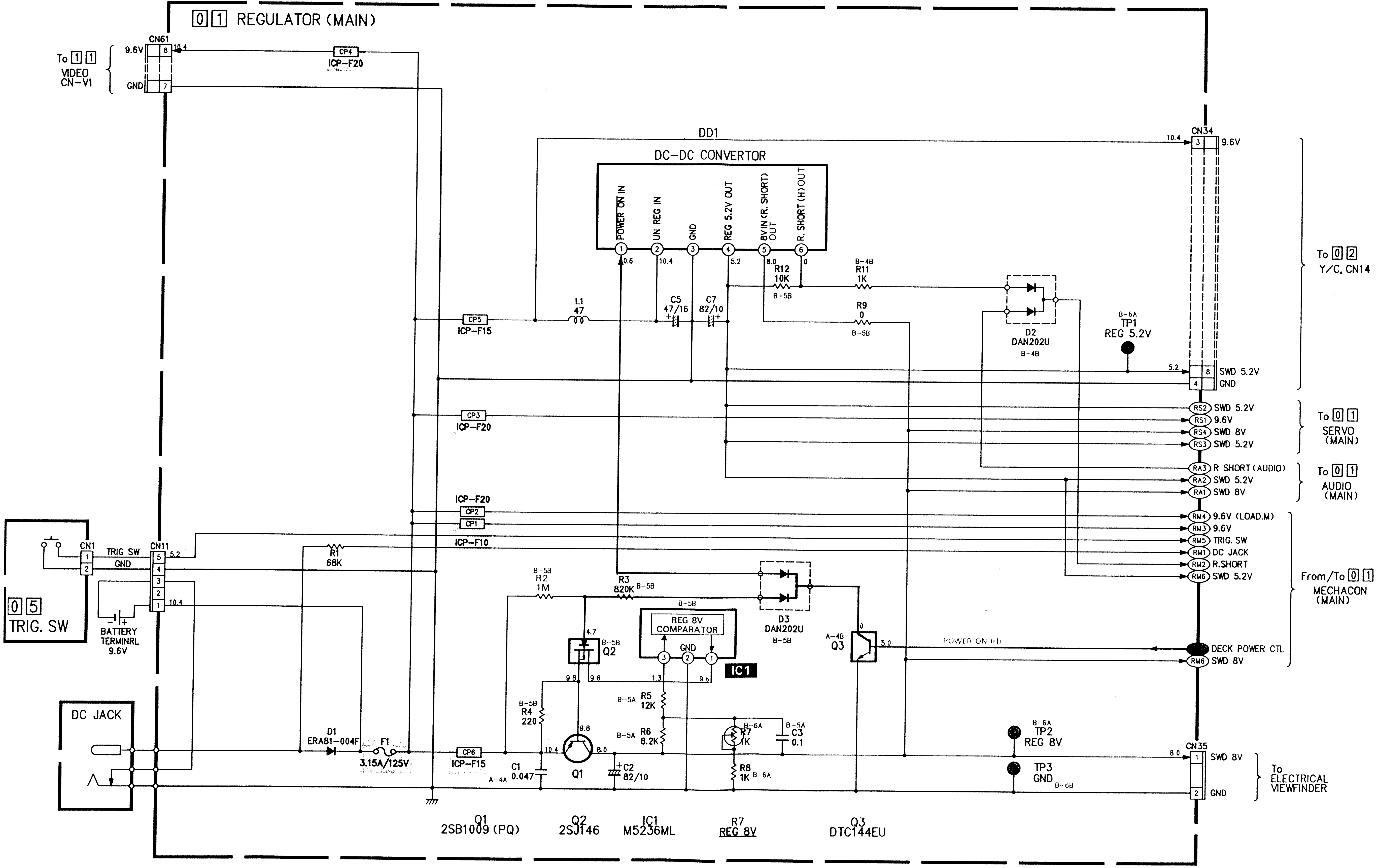
TRANSISTOR	NAME	L
DTA	DTA114EU	1D
	DTA123YU	1D
	DTA143EU	1D
	DTA144EU	1D
DTB	DTB113ZK	1D
	DTB798	8D
DTC	DTC114EU	1D
	DTC114WU	1D
	DTC144EU	1D
F	FMG1	6D
	FMW3	5D
2SA	2SA1532	1D
	2SA1576	1D
	2SA1577	1D
2SB	2SB1009	3D
	2SB624-T2BBV4	1D
	2SB798	4D
2SC	2SC3936	1D
	2SC4081	1D
2SD	2SD1819	1D
2SK	2SK665	2D
2SJ	2SJ146	7D

DIODE	NAME	L
D	DAN202U	1E
	DA204K	5E
	DA204U	5E
E	ERA81-004-F	3E
I	IMN10	6E
M	MA141WA	2E
	MA141WK	1E
	MA143	5E
R	RB451F	4E
	RB715F	4E
	RD6.8MB1	4E
S	SB-05-05CP-X	2E
	1SS99	4E

	IC			TRANSISTOR	DIODE
	A	B	C	D	E
1					 C A CATHODE A ANODE
2		 1 OUT 3 GND IN 2			 A ANODE C C CATHODE
3					 CATHODE ANODE
4					 CATHODE ANODE
5					 A2 C1 A1 C2 CATHODE 1 ANODE 2 ANODE 1 CATHODE 2
6					
7					
8		1. IN 2. IN 3. GND 4. OUT 5. Vcc			

5.6 REGULATOR (MAIN) SCHEMATIC DIAGRAM

- Address of chip parts
  A - 1D
  Address
  A : Front
  B : Rear

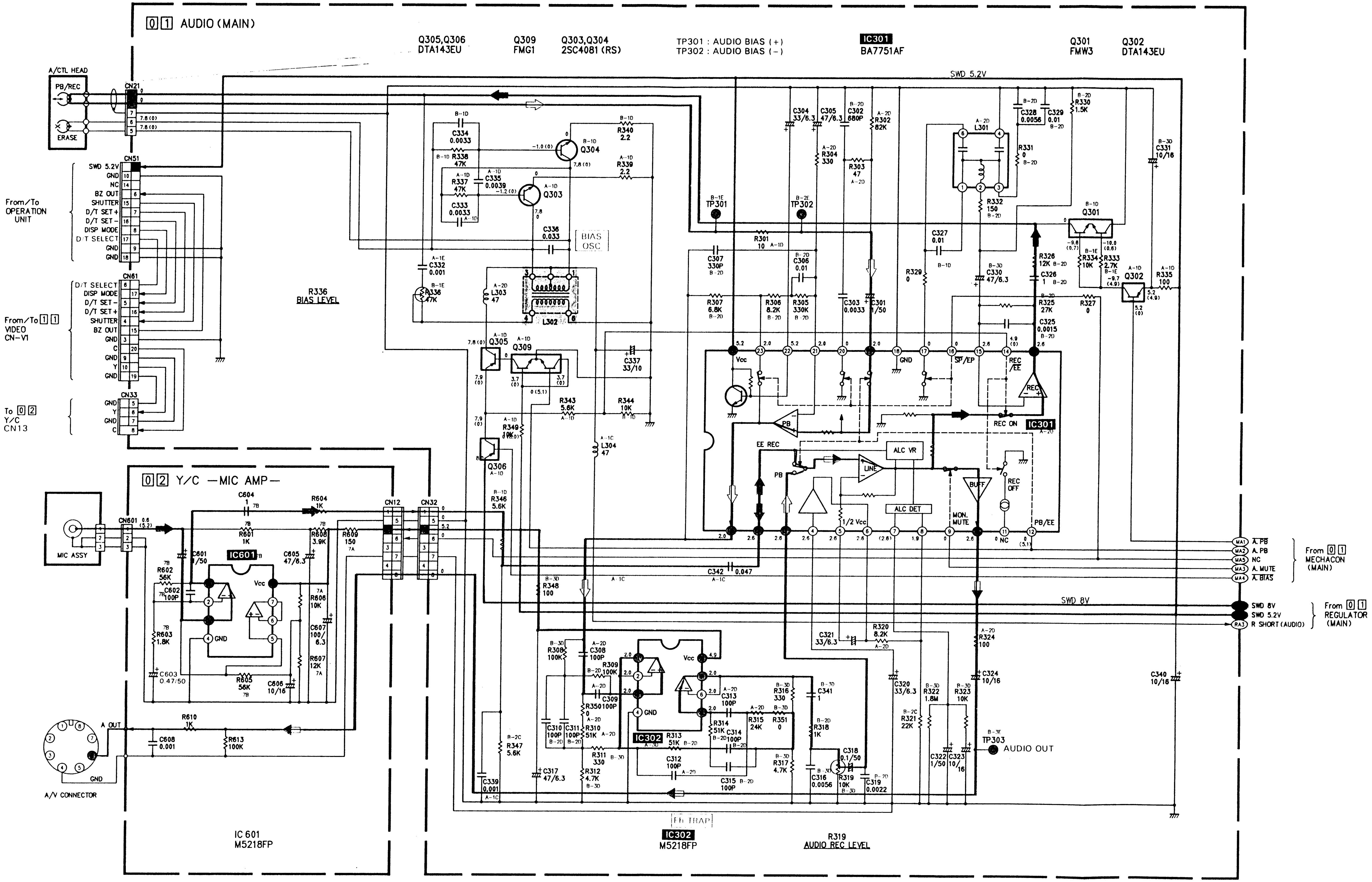


0 1 REGULATOR (MAIN)
To 1 1 VIDEO CN-V1
CN61
9.6V
GND
CP4 ICP-F20
DD1
DC-DC CONVERTOR
POWER ON IN
UN REG IN
GND
REG 5.2V OUT
8V IN (R. SHORT) OUT
R. SHORT (H) OUT
R12 10K
R11 1K
R9 0
L1 47
C5 47/16
C7 82/10
CP5 ICP-F15
D2 DAN202U
TP1 REG 5.2V
CN34
9.6V
SWD 5.2V
GND
To 0 2 Y/C, CN14
CP3 ICP-F20
RS2 SWD 5.2V
RS1 9.6V
RS4 SWD 8V
RS3 SWD 5.2V
To 0 1 SERVO (MAIN)
RA3 R SHORT (AUDIO)
RA2 SWD 5.2V
RA1 SWD 8V
To 0 1 AUDIO (MAIN)
ICP-F20
CP2
CP1
ICP-F10
RM4 9.6V (LOAD.M)
RM3 9.6V
RM5 TRIG. SW
RM1 DC JACK
RM2 R.SHORT
RM6 SWD 5.2V
From/To 0 1 MECHACON (MAIN)
0 5 TRIG. SW
CN1
TRIG SW
GND
CN11
BATTERY TERMINRL 9.6V
R1 68K
R2 1M
R3 820K
D3 DAN202U
Q2
REG 8V COMPARATOR
GND
IC1
Q3
POWER ON (H)
DECK POWER CTL
RM6 SWD 8V
DC JACK
D1 ERA81-004F
F1 3.15A/125V
CP6 ICP-F15
C1 0.047
R4 220
Q1
C2 82/10
R5 12K
R6 8.2K
R7 1K
R8 1K
C3 0.1
TP2 REG 8V
TP3 GND
CN35
SWD 8V
GND
To ELECTRICAL VIEWFINDER
Q1 2SB1009 (PQ)
Q2 2SJ146
IC1 M5236ML
R7 REG 8V
Q3 DTC144EU

Voltage : DC measured with a digital voltmeter during recording (SP mode) and play back (SP mode) with alignment tape. Where voltage differ between recording and playback, the voltage during playback is shown in parenthesis.

- Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

5.7 AUDIO (MAIN) AND MIC AMP (Y/C) SCHEMATIC DIAGRAMS


01 AUDIO (MAIN)
Q305,Q306 DTA143EU
Q309 FMG1
Q303,Q304 2SC4081 (RS)
TP301 : AUDIO BIAS (+)
TP302 : AUDIO BIAS (−)
IC301 BA7751AF
Q301 FMW3
Q302 DTA143EU
A/CTL HEAD
PB/REC
ERASE
CN21
CN51
SWD 5.2V
GND
NC
BZ OUT
SHUTTER
D/T SET+
D/T SET−
DISP MODE
D/T SELECT
From/To OPERATION UNIT
CN61
From/To 11 VIDEO CN-V1
CN33
Y
C
To 02 Y/C CN13
R336 BIAS LEVEL
BIAS OSC
L302
L303
L304
Q304
Q303
Q305
Q306
Q309
L301
TP301
TP302
SWD 5.2V
Vcc
GND
SP/EP
REC /EE
REC ON
IC301
EE REC
PB
LINE
ALC VR
ALC DET
1/2 Vcc
MON. MUTE
BUFF
REC OFF
PB/EE
NC
A PB
A PB
NC
A MUTE
A BIAS
From 01 MECHACON (MAIN)
SWD 8V
SWD 8V
SWD 5.2V
R SHORT (AUDIO)
From 01 REGULATOR (MAIN)
02 Y/C −MIC AMP−
MIC ASSY
CN601
IC601
CN12
CN32
A OUT
GND
A/V CONNECTOR
IC 601 M5218FP
IC302
Vcc
GND
FB TRAP
IC302 M5218FP
R319 AUDIO REC LEVEL
TP303
AUDIO OUT

- Voltage : DC measured with a digital voltmeter during recording (SP mode) and play back (SP mode) with alignment tape. Where voltage differ between recording and playback, the voltage during playback is shown in parenthesis.

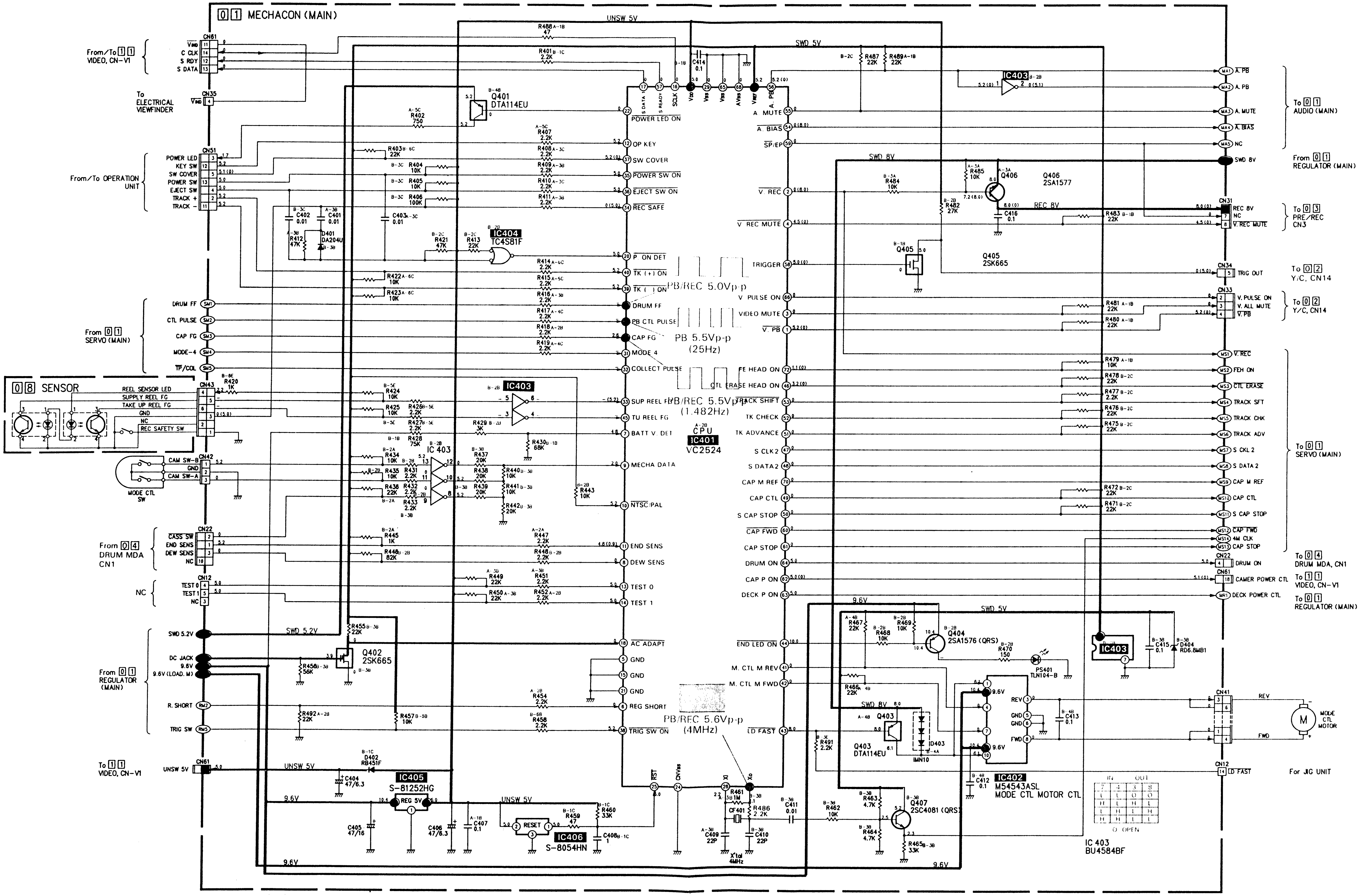
- Address of chip parts
  A - 1D
  Address
  A : Front
  B : Rear

- SIGNAL PATH
  ← REC SIGNAL
  ⇦ PB SIGNAL
  ◀ REC·PB SIGNAL

- Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

5.8 MECHANISM CONTROL (MAIN) SCHEMATIC DIAGRAM

- Voltage : DC measured with a digital voltmeter during recording (SP mode) and play back (SP mode) with alignment tape. Where voltage differ between recording and playback, the voltage during playback is shown in parenthesis.
- Address of chip parts
  A - 1D
  Address
  A : Front
  B : Rear
- Waveform : Measured with a color bar during recording (SP mode) and play back (SP mode) with alignment tape.



01 MECHACON (MAIN)
08 SENSOR
From/To 11 VIDEO, CN-V1
To ELECTRICAL VIEWFINDER
From/To OPERATION UNIT
From 01 SERVO (MAIN)
From 04 DRUM MDA CN1
NC
From 01 REGULATOR (MAIN)
To 11 VIDEO, CN-V1
To 01 AUDIO (MAIN)
From 01 REGULATOR (MAIN)
To 03 PRE/REC CN3
To 02 Y/C, CN14
To 02 Y/C, CN14
To 01 SERVO (MAIN)
To 04 DRUM MDA, CN1
To 11 VIDEO, CN-V1
To 01 REGULATOR (MAIN)
For JIG UNIT
IC401 CPU VC2524
IC402 M54543ASL MODE CTL MOTOR CTL
IC403 BU4584BF
IC404 TC4S81F
IC405 S-81252HG
IC406 S-8054HN
Q401 DTA114EU
Q402 2SK665
Q403 DTA114EU
Q404 2SA1576 (QRS)
Q405 2SK665
Q406 2SA1577
Q407 2SC4081 (QRS)
D401 DA204U
D402 RB451F
D403 IMN10
D404 RD6.8MB1
PS401 TLN104-B
X'tal 4MHz
PB/REC 5.0Vp-p
PB 5.5Vp-p (25Hz)
PB/REC 5.5Vp-p (1.482Hz)
PB/REC 5.6Vp-p (4MHz)
UNSW 5V
SWD 5V
SWD 8V
SWD 5.2V
9.6V
MODE CTL SW
MODE CTL MOTOR
REV
FWD

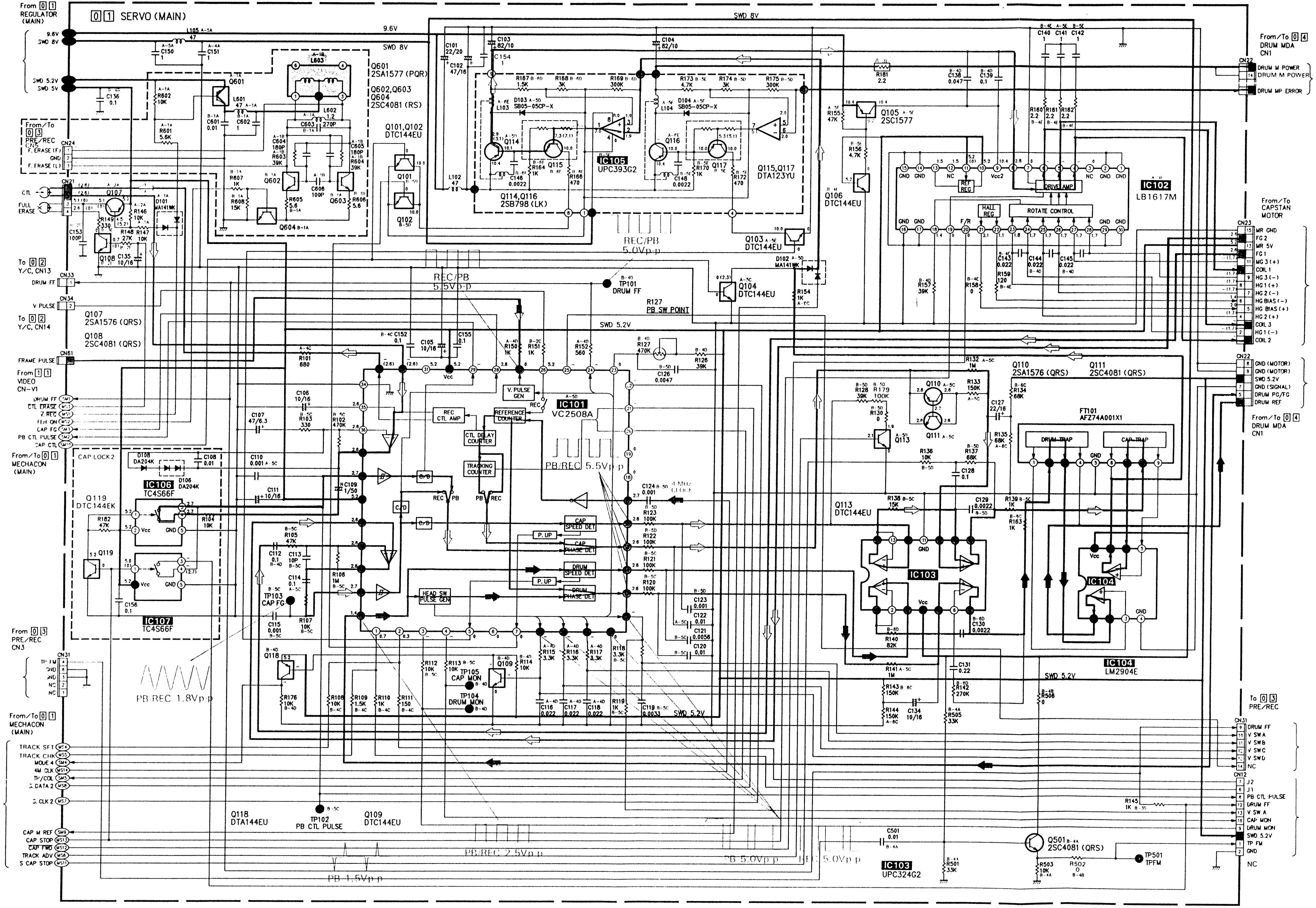
5.9 SERVO (MAIN) SCHEMATIC DIAGRAM

Address of chip parts
A - 1D
Address
A : Front
B : Rear

- Waveform : Measured with a color bar during recording (SP mode) and play back (SP mode) with alignment tape.

- SIGNAL PATH
  - ⬅ DRUM SERVO SIGNAL
  - ⇦ CAPSTAN SERVO SIGNAL

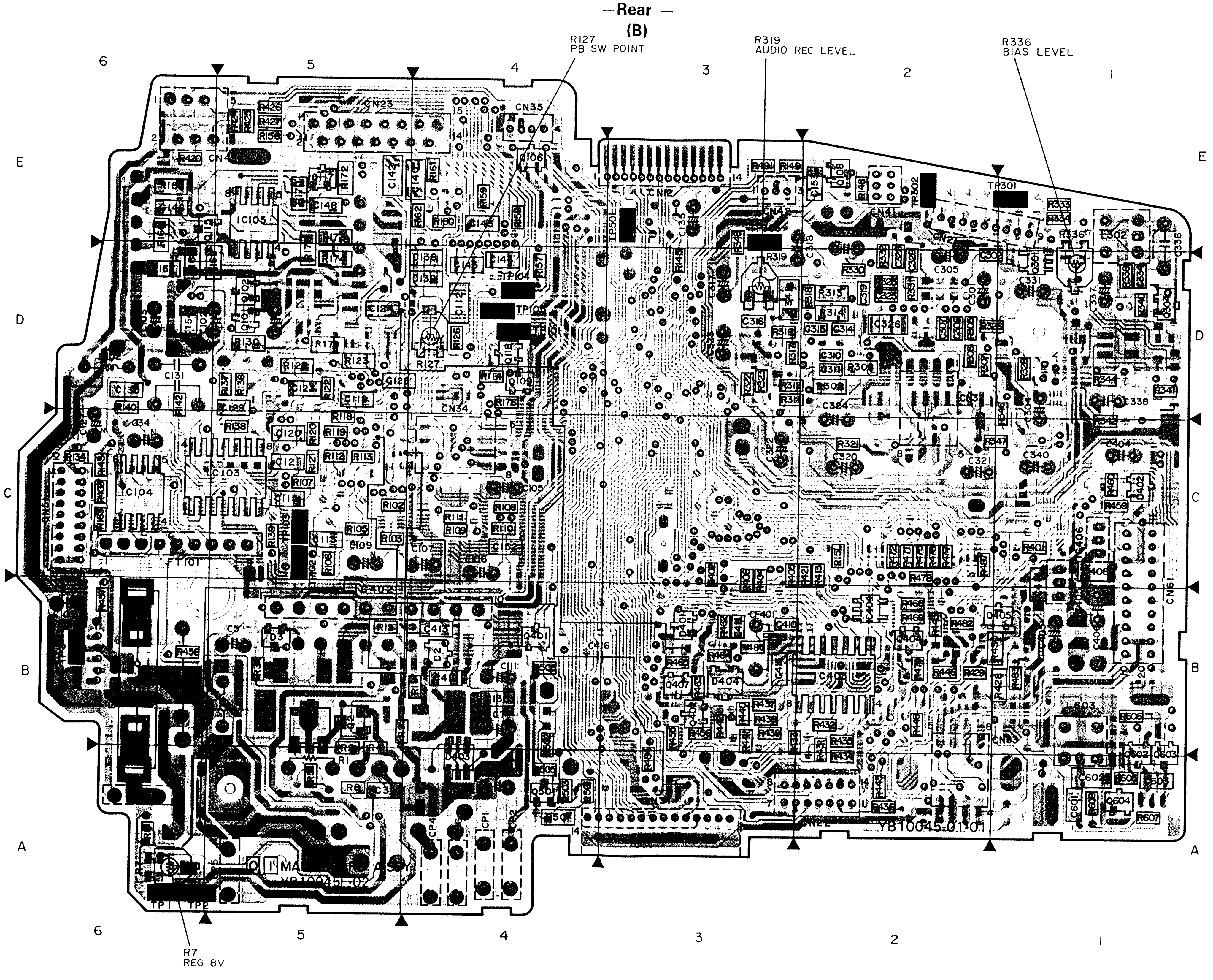
- Voltage : DC-measured with a digital voltmeter during recording (SP mode) and play back (SP mode) with alignment tape. Where voltage differ between recording and playback, the voltage during playback is shown in parenthesis.



01 SERVO (MAIN)
From 01 REGULATOR (MAIN)
9.6V
SWD 8V
SWD 5.2V
SWD 5V
From/To 03 PRE/REC CN5
F. ERASE (F)
GND
F. ERASE (L)
CN24
CN21
CTL
FULL ERASE
To 02 Y/C, CN13
CN33
DRUM FF
CN34
V PULSE
To 02 Y/C, CN14
Q107 2SA1576 (QRS)
Q108 2SC4081 (QRS)
CN61
FRAME PULSE
From 11 VIDEO CN-V1
DRUM FF
CTL ERASE
V. REC
FE/I ON
CAP FG
PB CTL PULSE
CAP CTL
From/To 01 MECHACON (MAIN)
CAP LOCK 2
IC106 TC4S66F
Q119 DTC144EK
IC107 TC4S66F
From 03 PRE/REC CN3
CN31
TP FM
GND
GND
NC
NC
PB REC 1.8Vp-p
From/To 01 MECHACON (MAIN)
TRACK SFT
TRACK CHK
MODE 4
4M CLK
TP/COL
S. DATA 2
S. CLK 2
CAP M REF
CAP STOP
CAP FWD
TRACK ADV
S CAP STOP
Q601 2SA1577 (PQR)
Q602,Q603 Q604 2SC4081 (RS)
Q101,Q102 DTC144EU
SWD 8V
IC105 UPC393G2
Q114,Q116 2SB798 (LK)
Q115,Q117 DTA123YU
REC/PB 5.0Vp-p
Q103 DTC144EU
Q104 DTC144EU
Q106 DTC144EU
Q105 2SC1577
TP101 DRUM FF
R127 PB SW POINT
REC/PB 5.5Vp-p
SWD 5.2V
IC101 VC2508A
V. PULSE GEN
REC CTL AMP
REFERENCE COUNTER
CTL DELAY COUNTER
TRACKING COUNTER
PB/REC 5.5Vp-p
4 MHz CLOCK
CAP SPEED DET
CAP PHASE DET
DRUM SPEED DET
DRUM PHASE DET
P. UP
HEAD SW PULSE GEN
TP103 CAP FG
TP105 CAP MON
TP104 DRUM MON
Q118 DTA144EU
TP102 PB CTL PULSE
Q109 DTC144EU
PB/REC 2.5Vp-p
PB 1.5Vp-p
PB 5.0Vp-p
REC 5.0Vp-p
IC102 LB1617M
DRIVE AMP
ROTATE CONTROL
HALL REG
F/R
REF REG
From/To 04 DRUM MDA CN1
CN22
DRUM M POWER
DRUM M POWER
DRUM MP ERROR
From/To CAPSTAN MOTOR
CN23
MR GND
FG 2
MR 5V
FG 1
MG 3 (+)
COIL 1
HG 3 (-)
HG 1 (+)
HG 2 (-)
HG BIAS (-)
HG BIAS (+)
HG 2 (+)
COIL 3
HG 1 (-)
COIL 2
CN22
GND (MOTOR)
GND (MOTOR)
SWD 5.2V
GND (SIGNAL)
DRUM PG/FG
DRUM REF
From/To 04 DRUM MDA CN1
Q110 2SA1576 (QRS)
Q111 2SC4081 (QRS)
Q113 DTC144EU
FT101 AFZ74A001X1
DRUM TRAP
CAP TRAP
IC103
IC104
IC104 LM2904E
SWD 5.2V
To 03 PRE/REC
CN31
DRUM FF
V SWA
V SWB
V SWC
V SWD
NC
CN12
J2
J1
PB CTL PULSE
DRUM FF
V SW A
CAP MON
DRUM MON
SWD 5.2V
TP FM
GND
NC
Q501 2SC4081 (QRS)
TP501 TPFM
IC103 UPC324G2

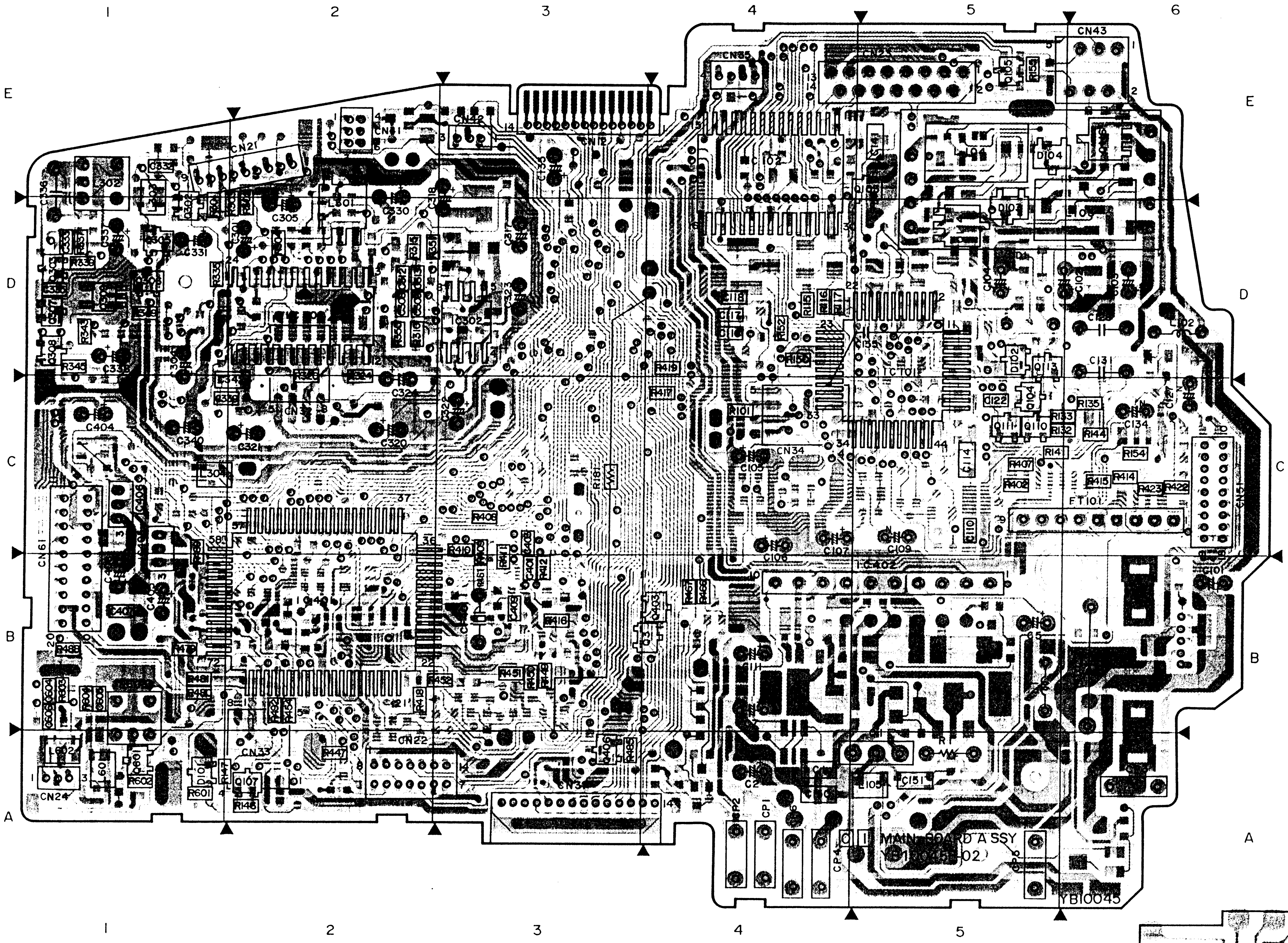
*Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

5.10 MAIN (REG/AUDIO/MECHACON/SERVO) CIRCUIT BOARD

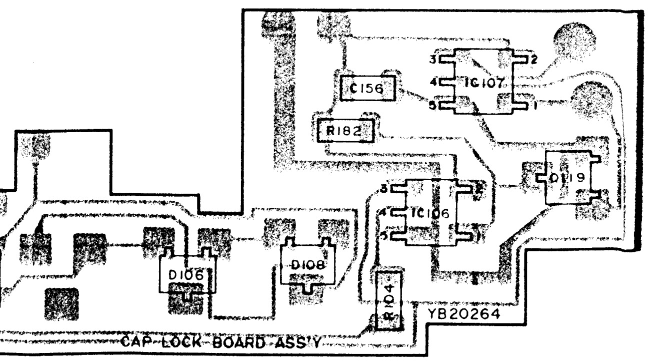

—Rear —
(B)
R127
PB SW POINT
R319
AUDIO REC LEVEL
R336
BIAS LEVEL
R7
REG 8V
6
5
4
3
2
1
E
D
C
B
A
TP1
TP2
YB10045-01-01

—Front —

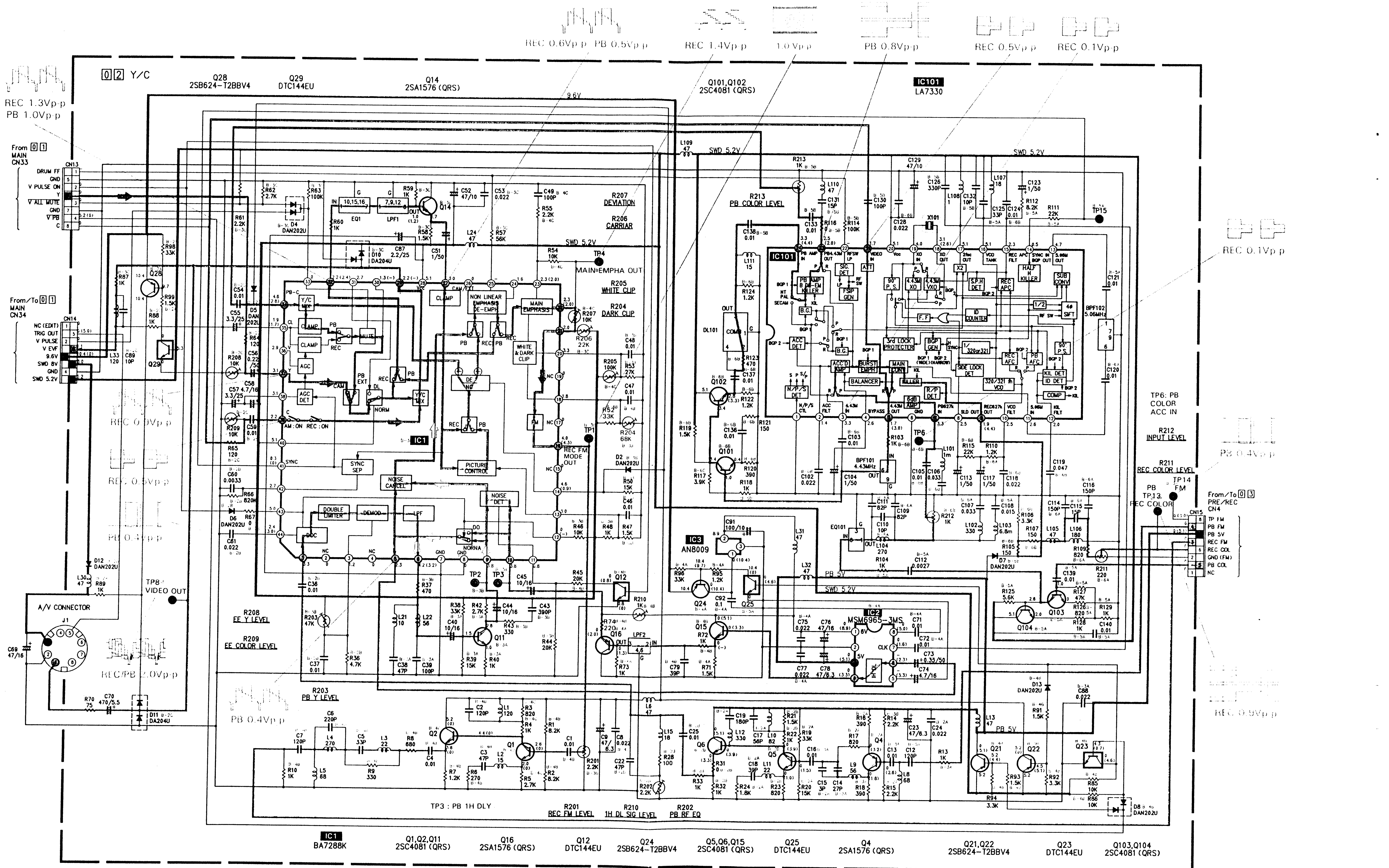
(A)


1
2
3
4
5
6
E
D
C
B
A
CN43
CN21
CN42
CN11
CN12
CN61
CN24
CN33
CN22
CN34
CN51
IC101
C404
C330
C305
R345
R141
R154
FT101
C107
C109
C108
IC151
MAIN BOARD A'SSY
YB10045

<CAPSTAN LOCK 2>


C156
IC107
R182
IC106
Q119
Q108
D106
D108
R104
YB20264A
CAP-LOCK-BOARD-ASS'Y
YB20264

5.11 Y/C SCHEMATIC DIAGRAM


02 Y/C
REC 0.6Vp-p PB 0.5Vp-p
REC 1.4Vp-p
1.0Vp-p
PB 0.8Vp-p
REC 0.5Vp-p
REC 0.1Vp-p
REC 1.3Vp-p
PB 1.0Vp-p
Q28 2SB624-T2BBV4
Q29 DTC144EU
Q14 2SA1576(QRS)
Q101,Q102 2SC4081(QRS)
IC101 LA7330
From 01 MAIN CN33
DRUM FF
GND
V PULSE ON
Y
V ALL MUTE
GND
V PB
C
From/To 01 MAIN CN34
NC (EDIT)
TRIG OUT
V PULSE
V EVF
9.6V
SWD 8V
GND
SWD 5.2V
IC1
R207 DEVIATION
R206 CARRIAR
R205 WHITE CLIP
R204 DARK CLIP
TP4 MAIN-EMPHA OUT
TP1 REC FM MODE OUT
R213 PB COLOR LEVEL
SWD 5.2V
TP15
REC 0.1Vp-p
TP6: PB COLOR ACC IN
R212 INPUT LEVEL
R211 REC COLOR LEVEL
PB 0.4Vp-p
TP14 FM
PB TP13 REC COLOR
From/To 03 PRE/REC CN4
TP FM
PB FM
PB 5V
REC FM
REC COL
GND (FM)
PB COL
NC
IC3 AN8009
IC2 MSM6965-3MS
TP8 VIDEO OUT
A/V CONNECTOR J1
R208 EE Y LEVEL
R209 EE COLOR LEVEL
REC/PB 2.0Vp-p
R203 PB Y LEVEL
PB 0.4Vp-p
REC 0.5Vp-p
TP2 TP3
TP3 : PB 1H DLY
R201 REC FM LEVEL
R210 1H DL SIG LEVEL
R202 PB RF EQ
IC1 BA7288K
Q1,Q2,Q11 2SC4081(QRS)
Q16 2SA1576(QRS)
Q12 DTC144EU
Q24 2SB624-T2BBV4
Q5,Q6,Q15 2SC4081(QRS)
Q25 DTC144EU
Q4 2SA1576(QRS)
Q21,Q22 2SB624-T2BBV4
Q23 DTC144EU
Q103,Q104 2SC4081(QRS)

- Address of chip parts
  A 1D
  └── Address
  └── A : Front
      B : Rear

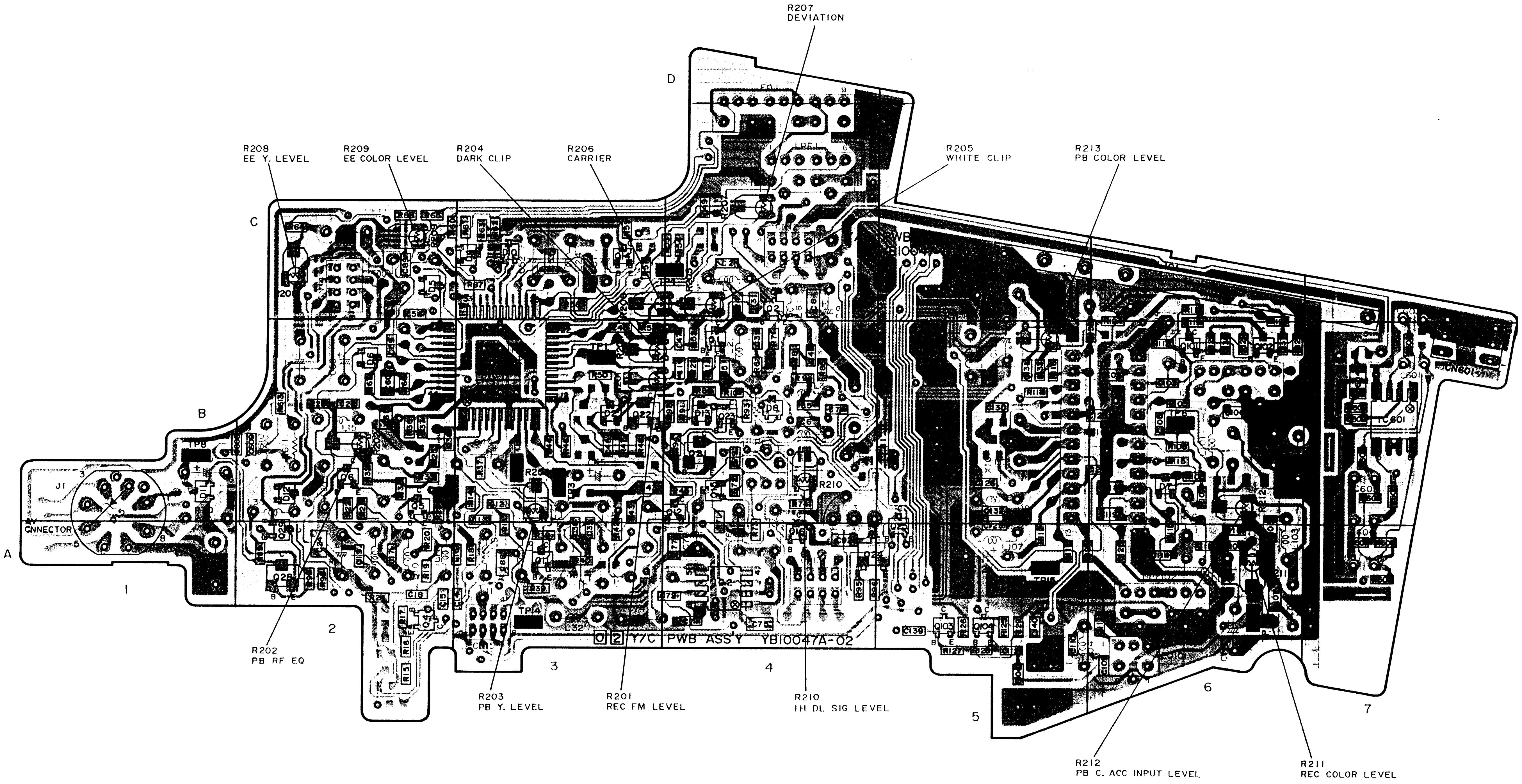
- Voltage : DC-measured with a digital voltmeter during recording (SP mode) and play back (SP mode) with alignment tape. Where voltage differ between recording and playback, the voltage during playback is shown in parenthesis.

- Waveform : Measured with a color bar during recording (SP mode) and play back (SP mode) with alignment tape.

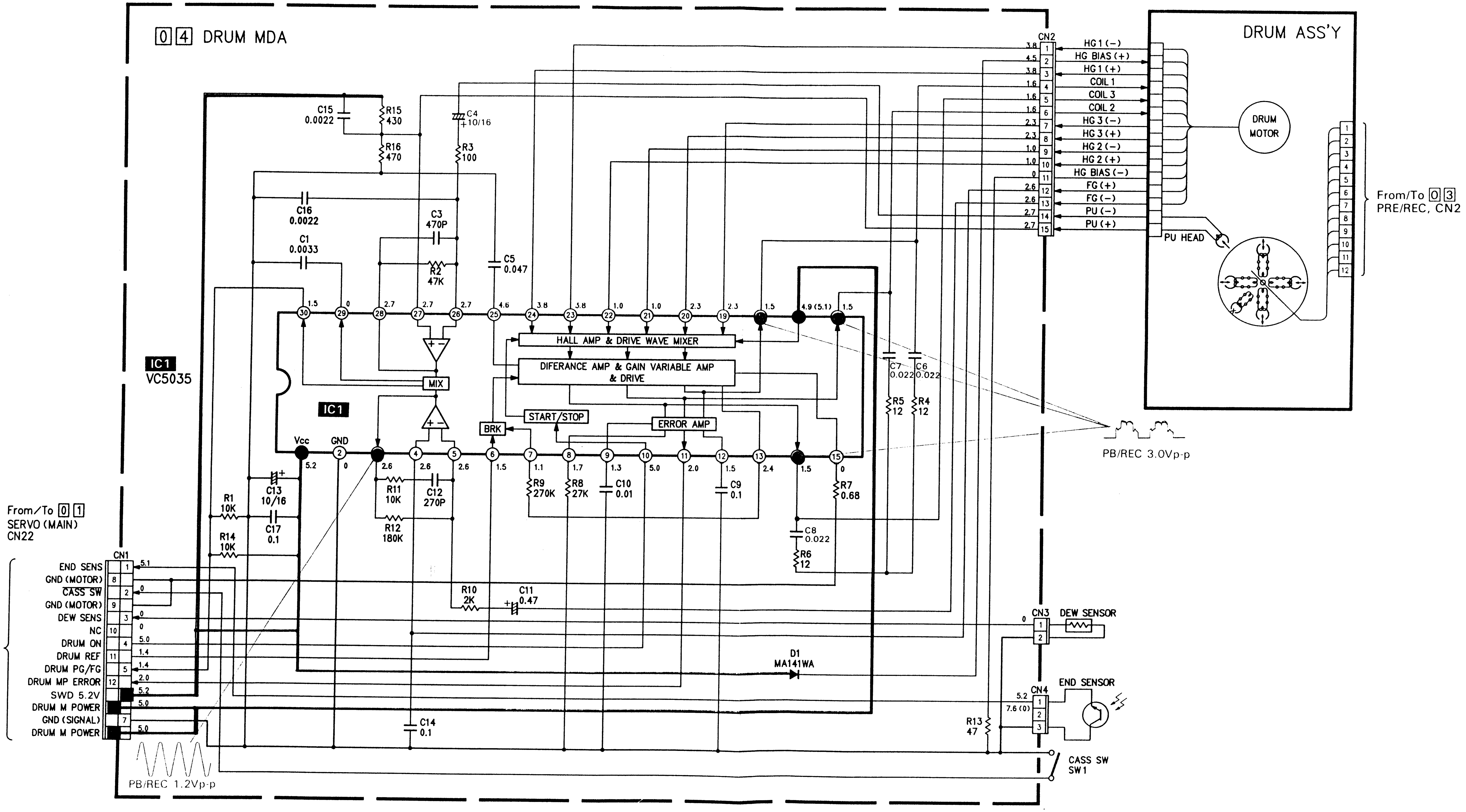
- SIGNAL PATH
  - ⬅ REC SIGNAL
  - ⇠ PB SIGNAL
  - ◀ REC/PB SIGNAL

- Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

5.12 Y/C CIRCUIT BOARD


R207
DEVIATION
R208
EE Y. LEVEL
R209
EE COLOR LEVEL
R204
DARK CLIP
R206
CARRIER
R205
WHITE CLIP
R213
PB COLOR LEVEL
R202
PB RF EQ
R203
PB Y. LEVEL
R201
REC FM LEVEL
R210
1H DL. SIG LEVEL
R212
PB C. ACC INPUT LEVEL
R211
REC COLOR LEVEL
A
B
C
D
1
2
3
4
5
6
7
J1
AV CNNECTOR
TP8
TP14
CN601
02 Y/C PWB ASS'Y YB10047A-02

5.13 DRUM MDA SCHEMATIC DIAGRAM



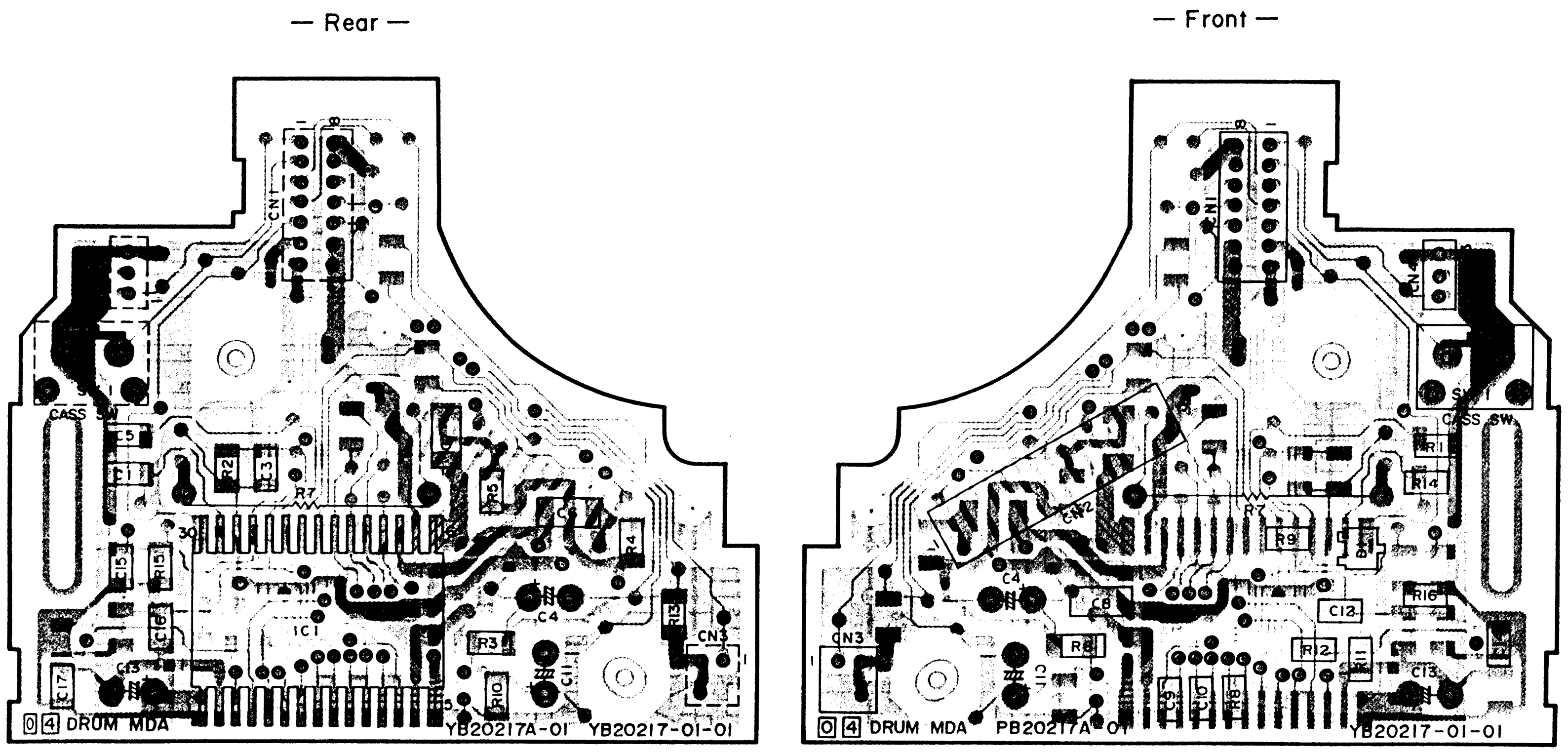
04 DRUM MDA
DRUM ASS'Y
DRUM MOTOR
PU HEAD
IC1
VC5035
HALL AMP & DRIVE WAVE MIXER
DIFERANCE AMP & GAIN VARIABLE AMP & DRIVE
MIX
START/STOP
BRK
ERROR AMP
Vcc
GND
CN1
CN2
CN3
CN4
HG 1 (−)
HG BIAS (+)
HG 1 (+)
COIL 1
COIL 3
COIL 2
HG 3 (−)
HG 3 (+)
HG 2 (−)
HG 2 (+)
HG BIAS (−)
FG (+)
FG (−)
PU (−)
PU (+)
From/To 03 PRE/REC, CN2
From/To 01 SERVO (MAIN) CN22
END SENS
GND (MOTOR)
CASS SW
GND (MOTOR)
DEW SENS
NC
DRUM ON
DRUM REF
DRUM PG/FG
DRUM MP ERROR
SWD 5.2V
DRUM M POWER
GND (SIGNAL)
DRUM M POWER
C15 0.0022
R15 430
R16 470
C4 10/16
R3 100
C16 0.0022
C3 470P
C1 0.0033
R2 47K
C5 0.047
C7 0.022
C6 0.022
R5 12
R4 12
R1 10K
C13 10/16
C17 0.1
R14 10K
R11 10K
C12 270P
R12 180K
R9 270K
R8 27K
C10 0.01
C9 0.1
R7 0.68
C8 0.022
R6 12
R10 2K
C11 0.47
C14 0.1
D1 MA141WA
DEW SENSOR
END SENSOR
R13 47
CASS SW SW1
PB/REC 3.0Vp-p
PB/REC 1.2Vp-p

Voltage : DC measured with a digital voltmeter during recording (SP mode) and play back (SP mode) with alignment tape. Where voltage differ between recording and playback, the voltage during playback is shown in parenthesis.

- Waveform : Measured with a color bar during recording (SP mode) and play back (SP mode) with alignment tape.

5.14 DRUM MDA, UPPER DRUM AND TRIGGER SWITCH CIRCUIT BOARDS

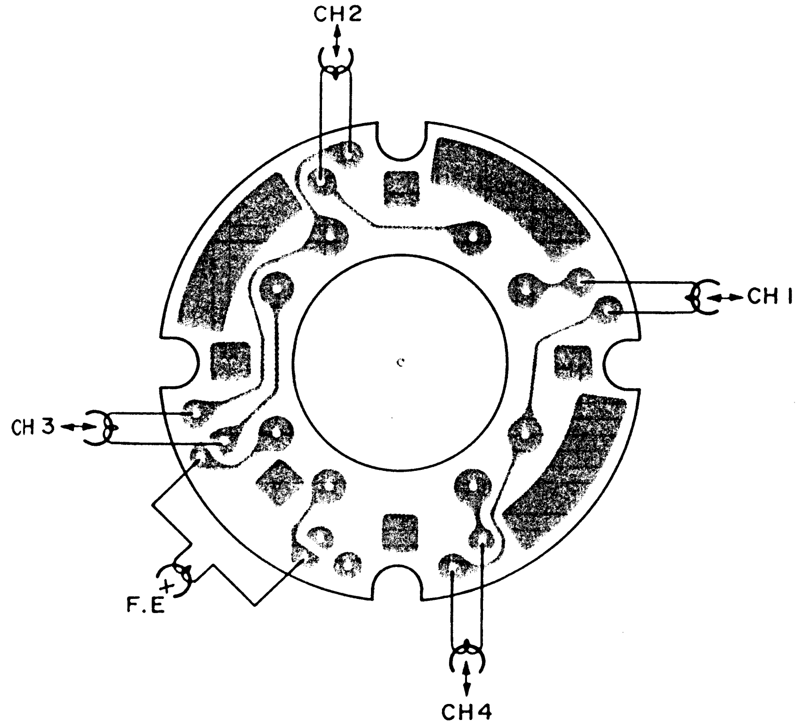
<DRUM MDA>


— Rear —

— Front —

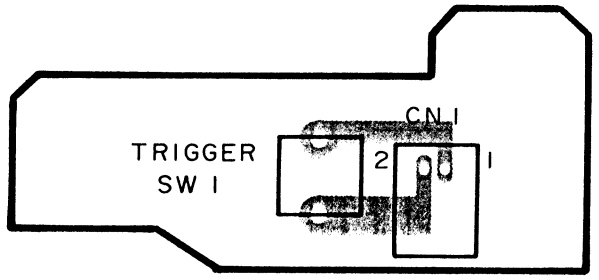
CN1
CN2
CN3
CN4
CASS SW
SW1
C1
C4
C5
C7
C8
C11
C12
C13
C15
C16
C17
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R12
R13
R14
R15
R16
C9
C10
IC1
30
0 4 DRUM MDA
YB20217A-01
YB20217-01-01
PB20217A-01

<UPPER DRUM>


CH2
CH1
CH3
F.E
CH4

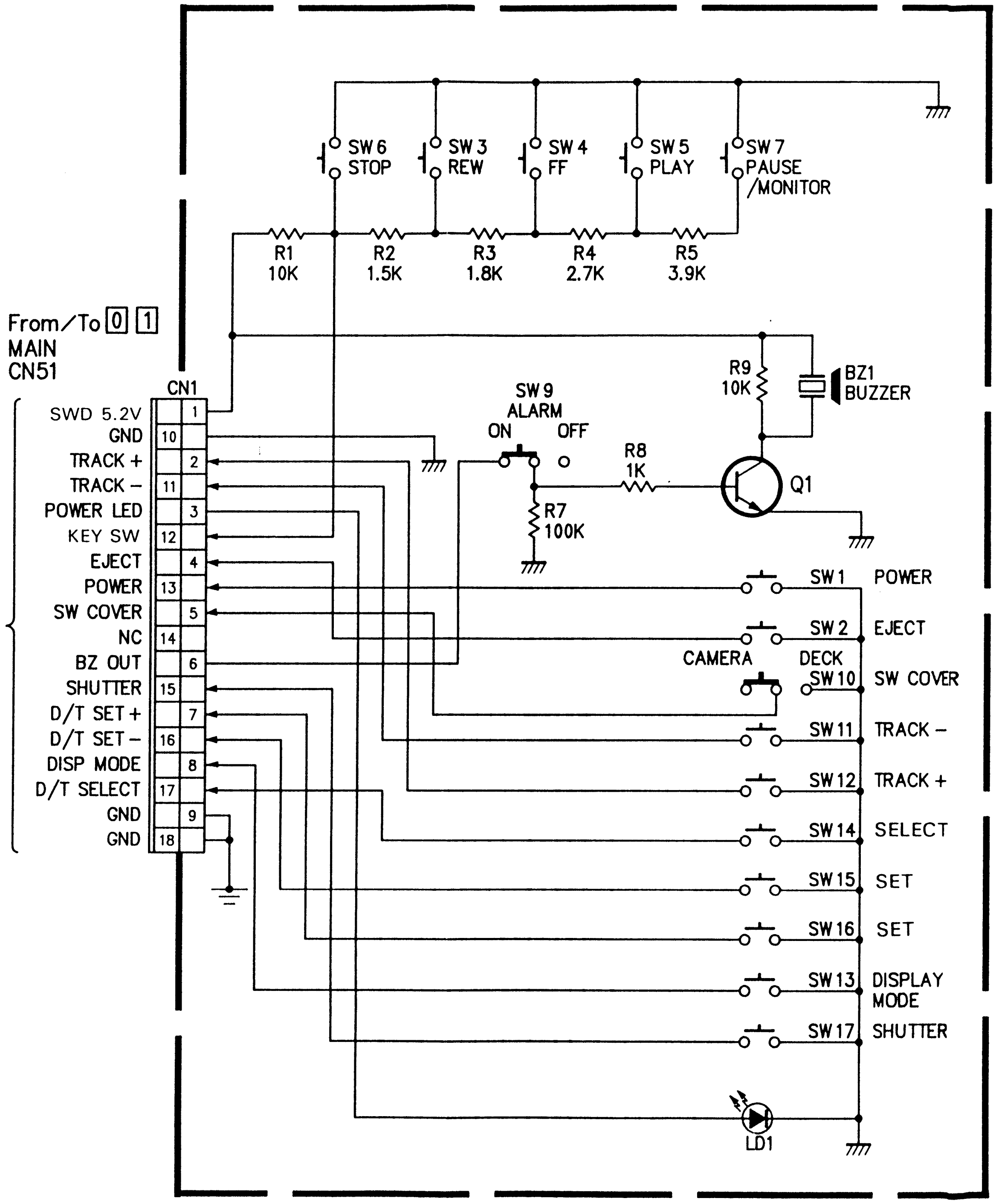
3 0 UPPER DRUM BOARD
YDM3021-2

<TRIGGER SWITCH>


TRIGGER SW 1
CN1
2
1

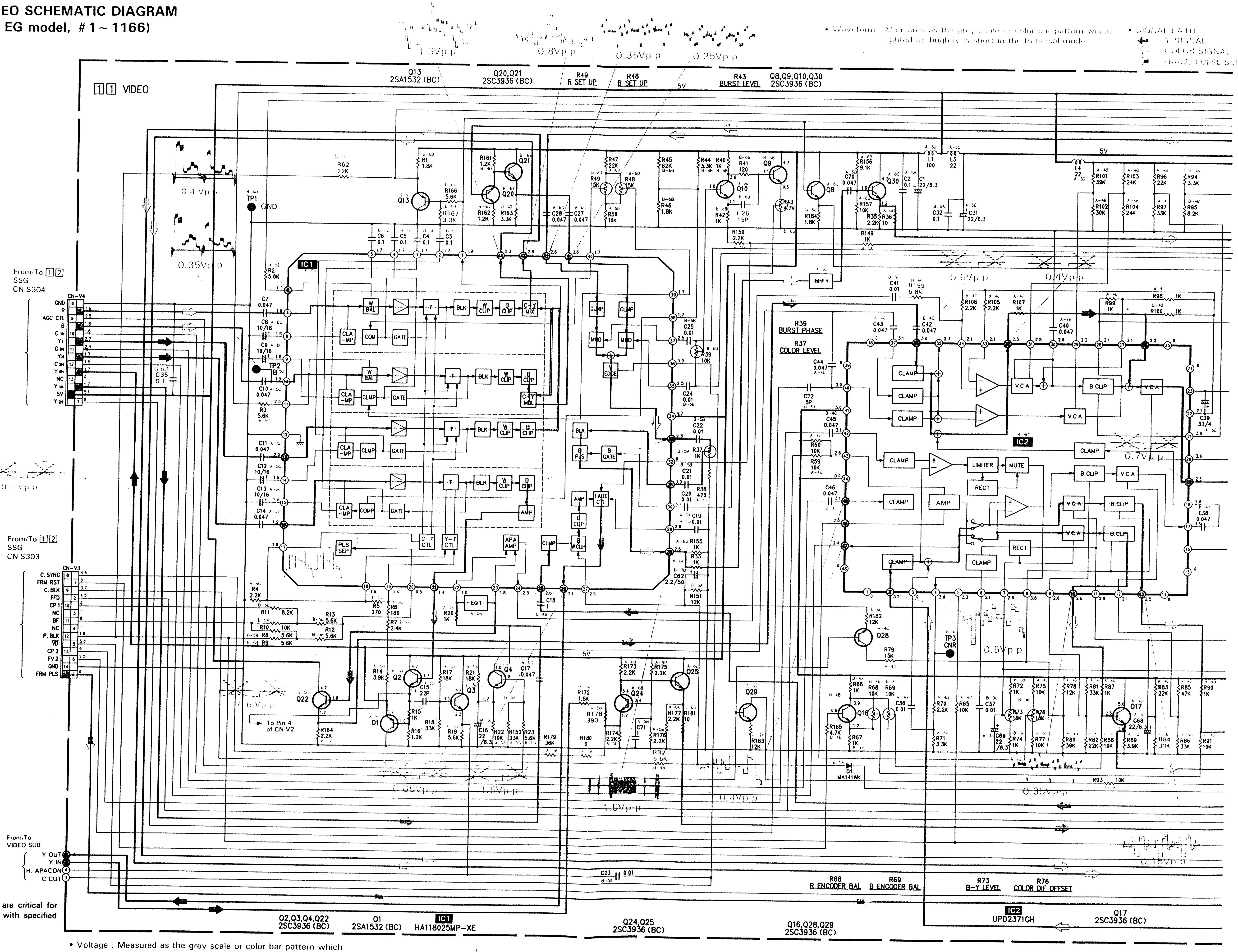
0 5 TRIGGER SW BOARD ASSY YB20218A-01
TRIGGER SW BOARD YB20218-01-01

5.15 OPERATION SCHEMATIC DIAGRAM


SW6 STOP
SW3 REW
SW4 FF
SW5 PLAY
SW7 PAUSE /MONITOR
R1 10K
R2 1.5K
R3 1.8K
R4 2.7K
R5 3.9K
From/To 0 1 MAIN CN51
CN1
SWD 5.2V 1
GND 10
TRACK + 2
TRACK − 11
POWER LED 3
KEY SW 12
EJECT 4
POWER 13
SW COVER 5
NC 14
BZ OUT 6
SHUTTER 15
D/T SET + 7
D/T SET − 16
DISP MODE 8
D/T SELECT 17
GND 9
GND 18
SW9 ALARM
ON
OFF
R7 100K
R8 1K
R9 10K
BZ1 BUZZER
Q1
SW1 POWER
SW2 EJECT
CAMERA
DECK
SW10 SW COVER
SW11 TRACK −
SW12 TRACK +
SW14 SELECT
SW15 SET
SW16 SET
SW13 DISPLAY MODE
SW17 SHUTTER
LD1

Note: This schematic diagram is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.

5.16 VIDEO SCHEMATIC DIAGRAM
(for EG model, #1～1166)



1 1 VIDEO
1.5Vp-p
0.8Vp-p
0.35Vp-p
0.25Vp-p
Q13 2SA1532 (BC)
Q20,Q21 2SC3936 (BC)
R49 R SET UP
R48 B SET UP
R43 BURST LEVEL
Q8,Q9,Q10,Q30 2SC3936 (BC)
5V
0.4Vp-p
0.35Vp-p
TP1
GND
TP2
TP3 CNR
IC1
IC2
From/To 1 2 SSG CN S304
CN-V4
GND
R
AGC CTL
B
C IN
YL
C IN
YH
C IN
Y IN
NC
Y IN
5V
Y IN
From/To 1 2 SSG CN S303
CN-V3
C. SYNC
FRM RST
C. BLK
FFD
CP 1
NC
BF
NC
P. BLK
VD
CP 2
FV 2
GND
FRM PLS
W BAL
BLK
W CLIP
B CLIP
C-Y MIX
CLAMP
COMP
GATE
EDGE
MOD
B PLS
B GATE
AMP
FADE CTL
B CLIP
B W CLIP
PLS SEP
C-Y CTL
Y-Y CTL
APA AMP
EQ1
BPF1
R39 BURST PHASE
R37 COLOR LEVEL
VCA
B.CLIP
LIMITER
MUTE
RECT
0.6Vp-p
0.4Vp-p
0.7Vp-p
0.5Vp-p
0.6Vp-p
1.5Vp-p
1.5Vp-p
0.4Vp-p
0.35Vp-p
0.15Vp-p
To Pin 4 of CN V2
D1 MA141WK
R93 10K
From/To VIDEO SUB
Y OUT
Y IN
H. APACON
C CUT
R68 R ENCODER BAL
R69 B ENCODER BAL
R73 B-Y LEVEL
R76 COLOR DIF OFFSET
Q2,Q3,Q4,Q22 2SC3936 (BC)
Q1 2SA1532 (BC)
IC1 HA118025MP-XE
Q24,Q25 2SC3936 (BC)
Q16,Q28,Q29 2SC3936 (BC)
IC2 UPD2371GH
Q17 2SC3936 (BC)

• Waveform : Measured as the grey scale or color bar pattern which lighted up brightly is short in the Rehersal mode.

• SIGNAL PATH
- Y SIGNAL
- COLOR SIGNAL
- FRAME PULSE SIGNAL

• Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

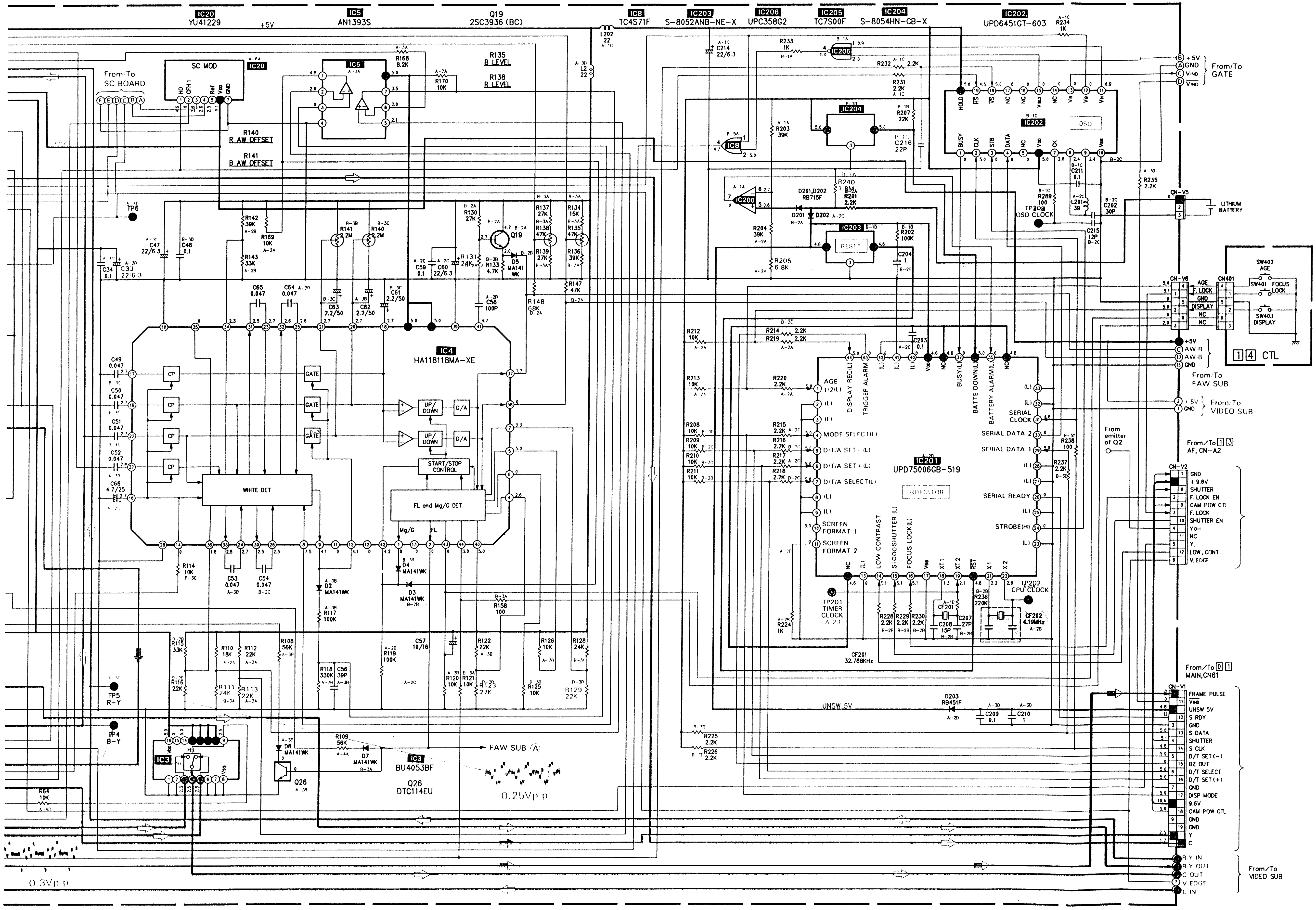
• Voltage : Measured as the grey scale or color bar pattern which lighted up brightly is short in the Rehersal mode.

- Address of chip parts
  A - 1D
  Address
  A : Front
  B : Rear

- Waveform : Measured as the grey scale or color bar pattern which lighted up brightly is short in the Rehersal mode.

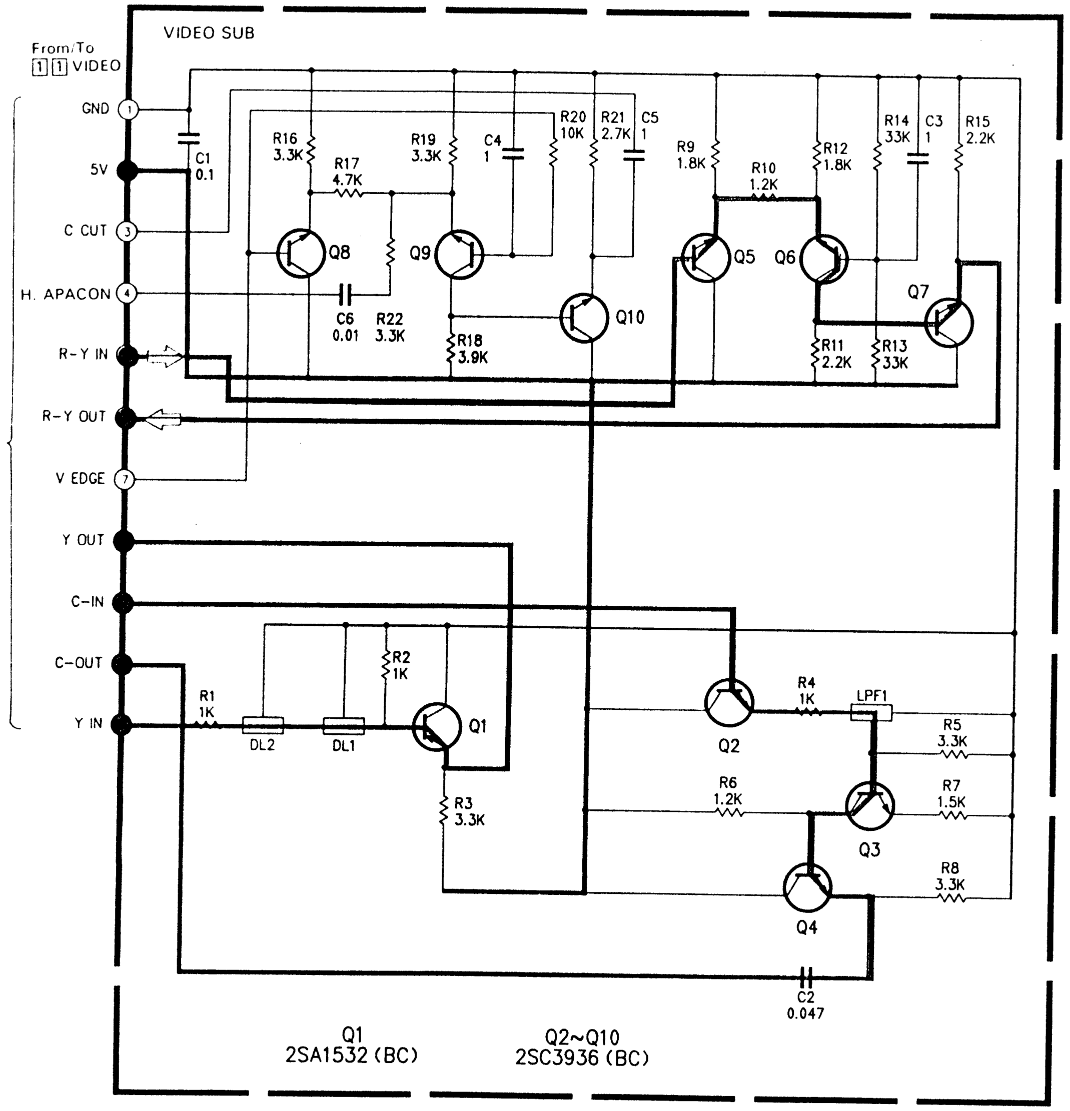
- SIGNAL PATH
  ← Y SIGNAL
  COLOR SIGNAL
  FRAME PULSE SIGNAL

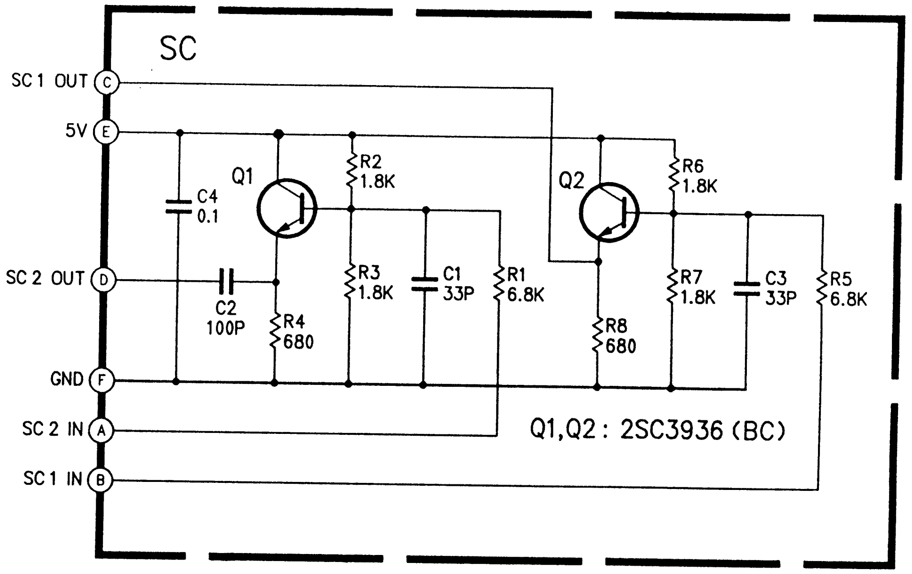
- **Shaded (▨) parts are critical for safety. Replace only with specified part numbers.**

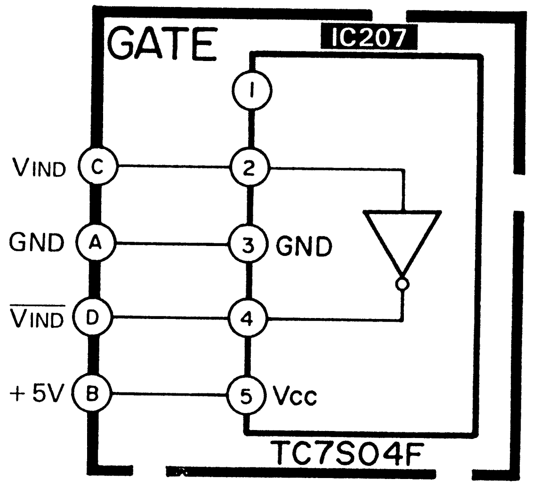


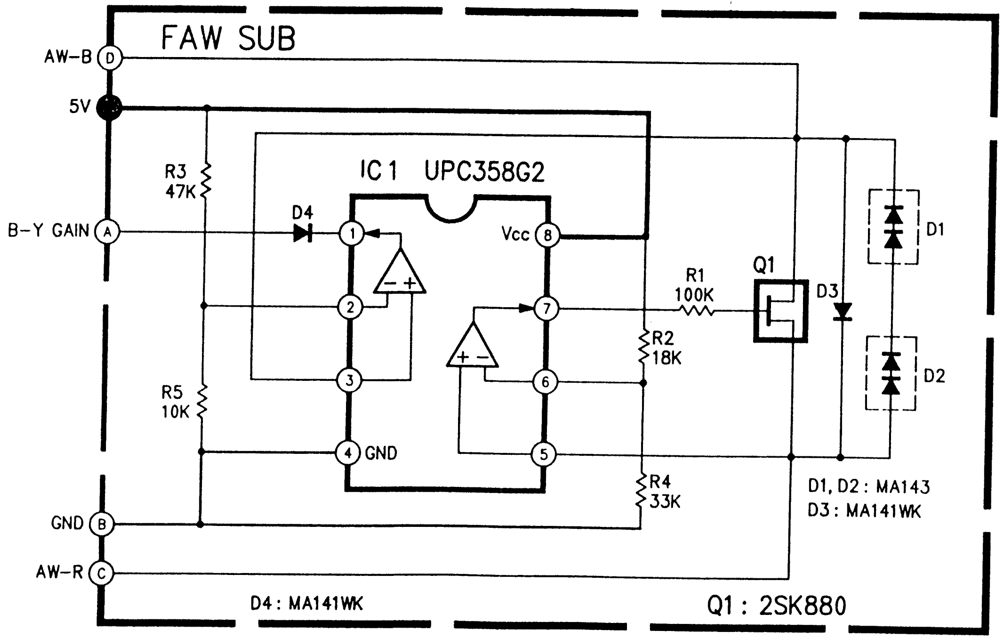
IC20 YU41229
+5V
IC5 AN1393S
Q19 2SC3936 (BC)
IC8 TC4S71F
IC203 S-8052ANB-NE-X
IC206 UPC358G2
IC205 TC7S00F
IC204 S-8054HN-CB-X
IC202 UPD6451GT-603
From/To SC BOARD
SC MOD
R135 B LEVEL
R138 R LEVEL
R140 R AW OFFSET
R141 B AW OFFSET
TP6
IC4 HA118118MA-XE
CP
GATE
UP/DOWN
D/A
WHITE DET
START/STOP CONTROL
FL and Mg/G DET
Mg/G
FL
IC201 UPD75006GB-519
AGE
DISPLAY RECIL
TRIGGER ALARM
BUSY(L)
BATTE DOWN(L)
BATTERY ALARM(L)
MODE SELECT(L)
D/T/A SET (L)
D/T/A SET + (L)
D/T/A SELECT(L)
SCREEN FORMAT 1
SCREEN FORMAT 2
SERIAL CLOCK
SERIAL DATA 2
SERIAL DATA 1
SERIAL READY
STROBE(H)
LOW CONTRAST
S.(OOO)SHUTTER (L)
FOCUS LOCK(L)
TP201 TIMER CLOCK
TP202 CPU CLOCK
CF201 32.768KHz
CF202 4.19MHz
TP203 OSD CLOCK
OSD
RESET
LITHIUM BATTERY
CN-V5
+5V
GND
VIND
From/To GATE
CN-V6
CN401
SW402 AGE
SW401 FOCUS LOCK
SW403 DISPLAY
F. LOCK
DISPLAY
NC
14 CTL
AW R
AW B
From/To FAW SUB
From/To VIDEO SUB
From emitter of Q2
From/To 13 AF, CN-A2
CN-V2
+9.6V
SHUTTER
F. LOCK EN
CAM POW CTL
SHUTTER EN
YOH
Yi
LOW, CONT
V. EDGE
From/To 01 MAIN,CN61
CN-V1
FRAME PULSE
UNSW 5V
S RDY
S DATA
S CLK
D/T SET(-)
BZ OUT
D/T SELECT
D/T SET(+)
DISP MODE
9.6V
Y
C
R Y IN
R Y OUT
C OUT
V EDGE
C IN
UNSW 5V
D203 RB451F
TP5 R-Y
TP4 B-Y
IC3 BU4053BF
Q26 DTC114EU
FAW SUB A
0.25Vp-p
0.3Vp-p

- Voltage : Measured as the grey scale or color bar pattern which lighted up brightly is short in the Rehersal mode.


VIDEO SUB
From/To
1 1 VIDEO
GND 1
5V
C CUT 3
H. APACON 4
R-Y IN
R-Y OUT
V EDGE 7
Y OUT
C-IN
C-OUT
Y IN
C1 0.1
R16 3.3K
R17 4.7K
R19 3.3K
C4 1
R20 10K
R21 2.7K
C5 1
R9 1.8K
R10 1.2K
R12 1.8K
R14 33K
C3 1
R15 2.2K
Q8
Q9
Q10
Q5
Q6
Q7
C6 0.01
R22 3.3K
R18 3.9K
R11 2.2K
R13 33K
R2 1K
R1 1K
DL2
DL1
Q1
Q2
R4 1K
LPF1
R5 3.3K
R3 3.3K
R6 1.2K
Q3
R7 1.5K
R8 3.3K
Q4
C2 0.047
Q1 2SA1532 (BC)
Q2~Q10 2SC3936 (BC)

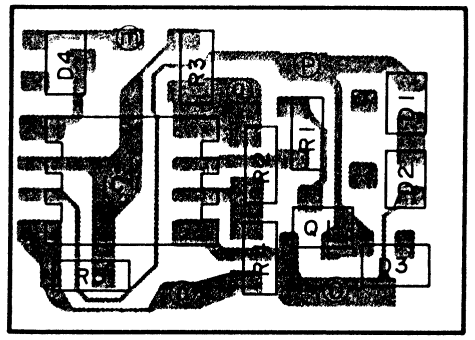

SC
SC1 OUT C
5V E
SC2 OUT D
GND F
SC2 IN A
SC1 IN B
C4 0.1
Q1
R2 1.8K
C2 100P
R4 680
R3 1.8K
C1 33P
R1 6.8K
Q2
R6 1.8K
R8 680
R7 1.8K
C3 33P
R5 6.8K
Q1,Q2 : 2SC3936 (BC)


GATE
IC207
VIND C
GND A
VIND D
+5V B
1
2
3 GND
4
5 Vcc
TC7S04F

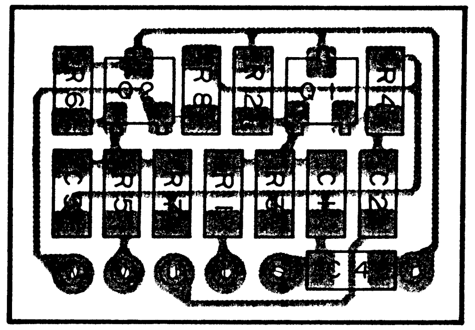

FAW SUB
AW-B D
5V
R3 47K
B-Y GAIN A
D4
IC1 UPC358G2
Vcc 8
1
2
3
4 GND
5
6
7
R1 100K
Q1
D3
D1
D2
R2 18K
R5 10K
R4 33K
GND B
AW-R C
D1, D2 : MA143
D3 : MA141WK
D4 : MA141WK
Q1 : 2SK880

5.17 VIDEO, FAW, SC, VIDEO SUB AND CONTROL CIRCUIT BOARDS
(for EG model #1~1166)

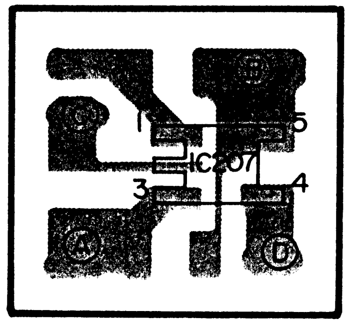
<FAW SUB>


D4
R3
R1
R2
Q
D2
D1
D3

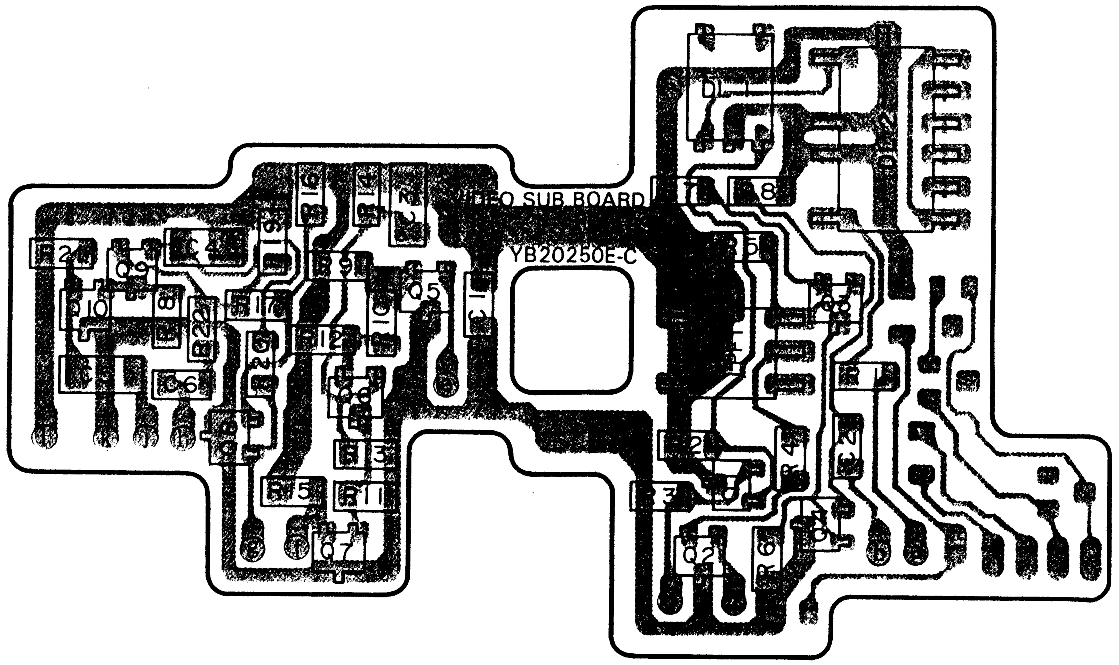
<SC>



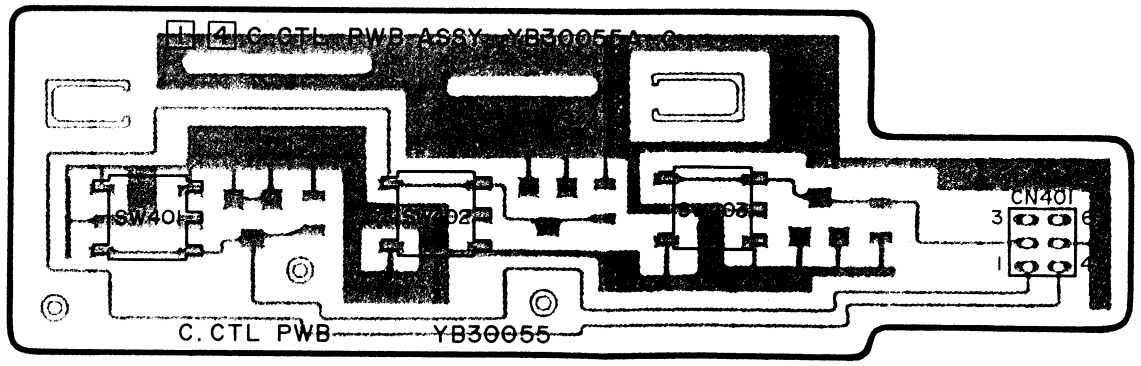
<GATE>

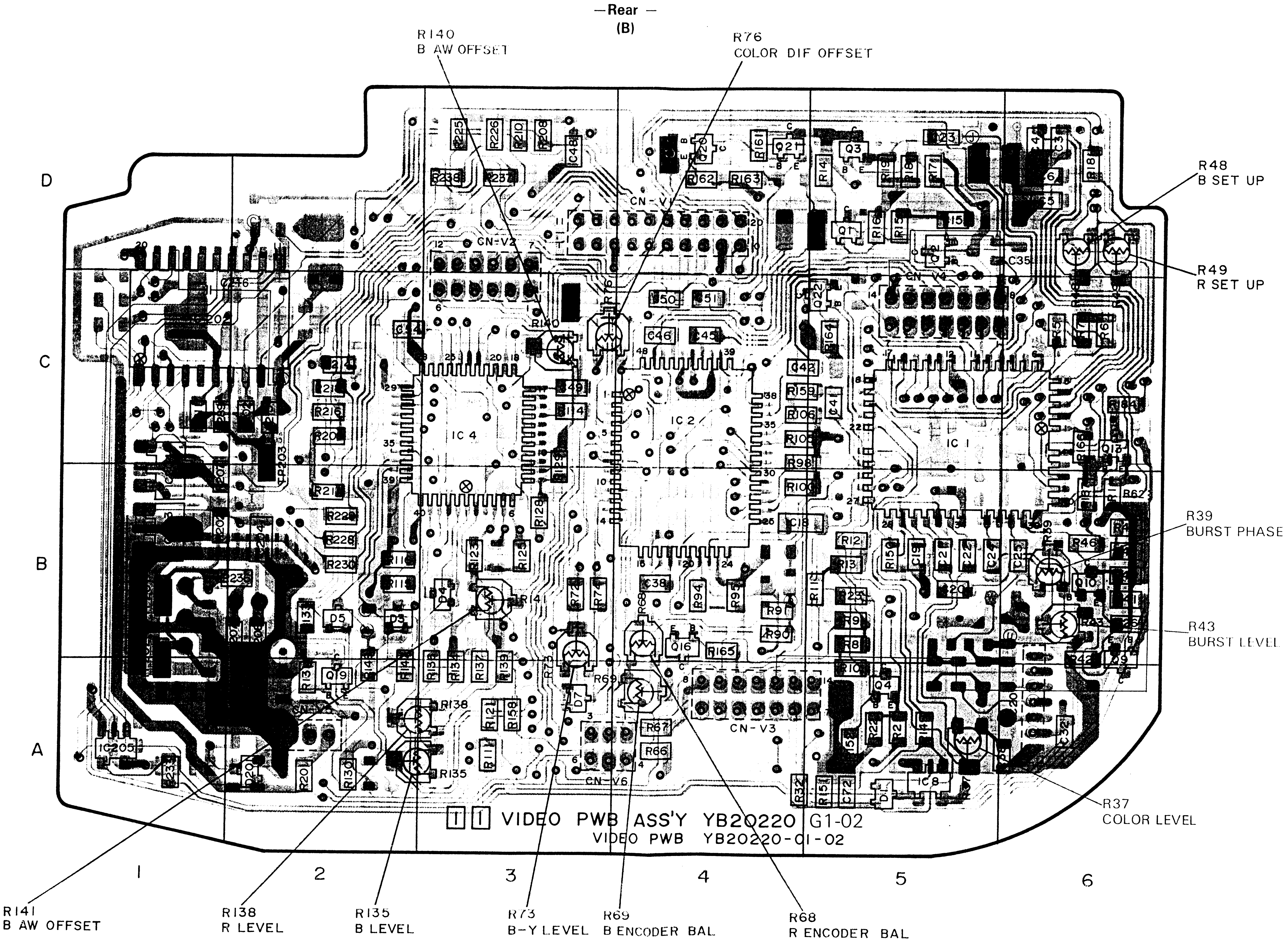


<VIDEO SUB>

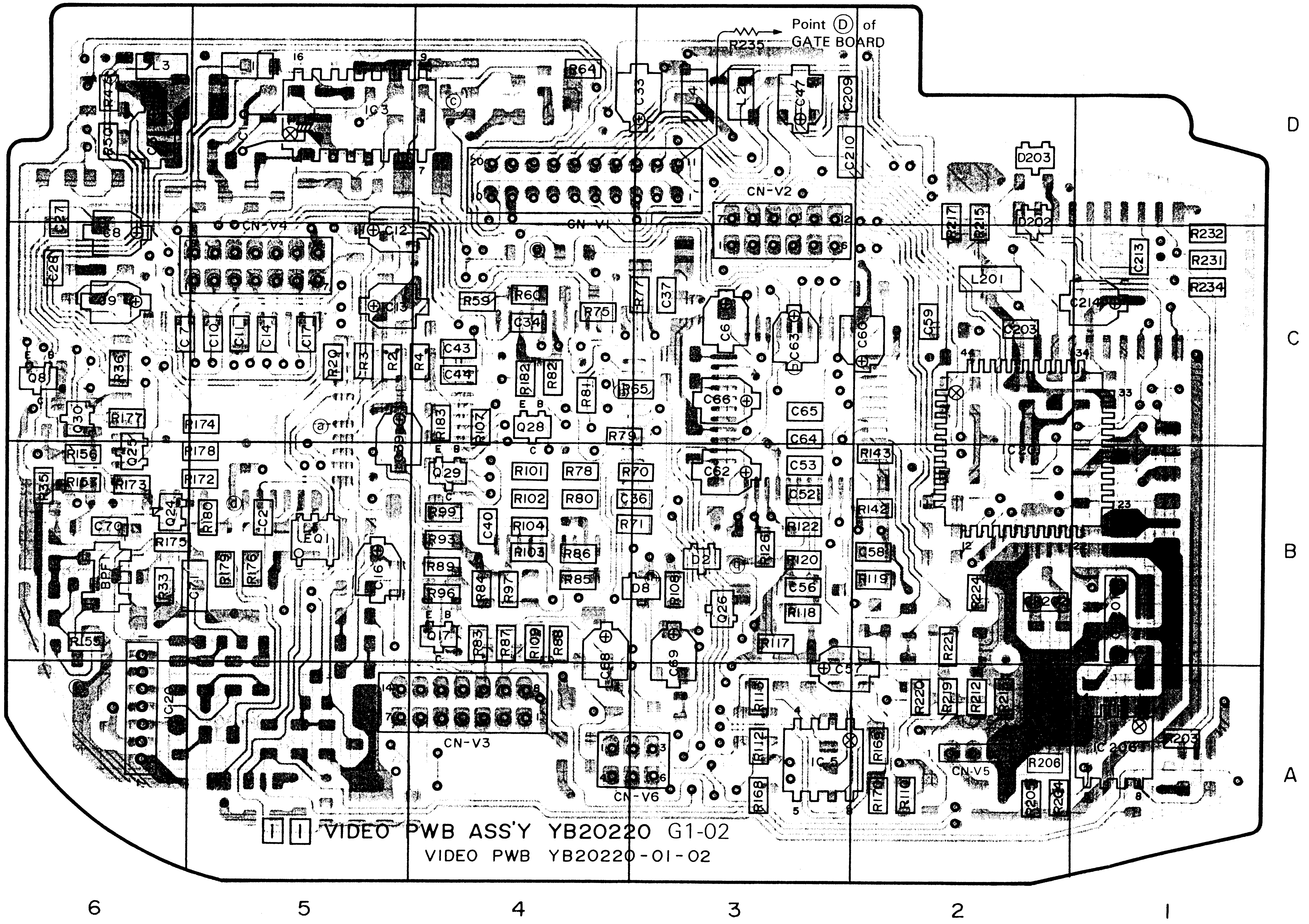

VIDEO SUB BOARD
YB20250E-C
D1
Q9
Q5
Q6
Q7
Q2
R24
R10
R16
R12
R19
R13
R15
R11
R23
C4
C6
C1

<CONTROL>


C.CTL PWB ASSY YB30055A-C
SW401
SW402
SW403
CN401
3
6
1
4
C.CTL PWB YB30055


—Rear —
(B)
R140
B AW OFFSET
R76
COLOR DIF OFFSET
R48
B SET UP
R49
R SET UP
R39
BURST PHASE
R43
BURST LEVEL
R37
COLOR LEVEL
R141
B AW OFFSET
R138
R LEVEL
R135
B LEVEL
R73
B–Y LEVEL
R69
B ENCODER BAL
R68
R ENCODER BAL
D
C
B
A
1
2
3
4
5
6
IC 1
IC 2
IC 4
CN-V1
CN-V2
CN-V3
CN-V4
CN-V6
IC205
IC8
VIDEO PWB ASS'Y YB20220 G1-02
VIDEO PWB YB20220-01-02

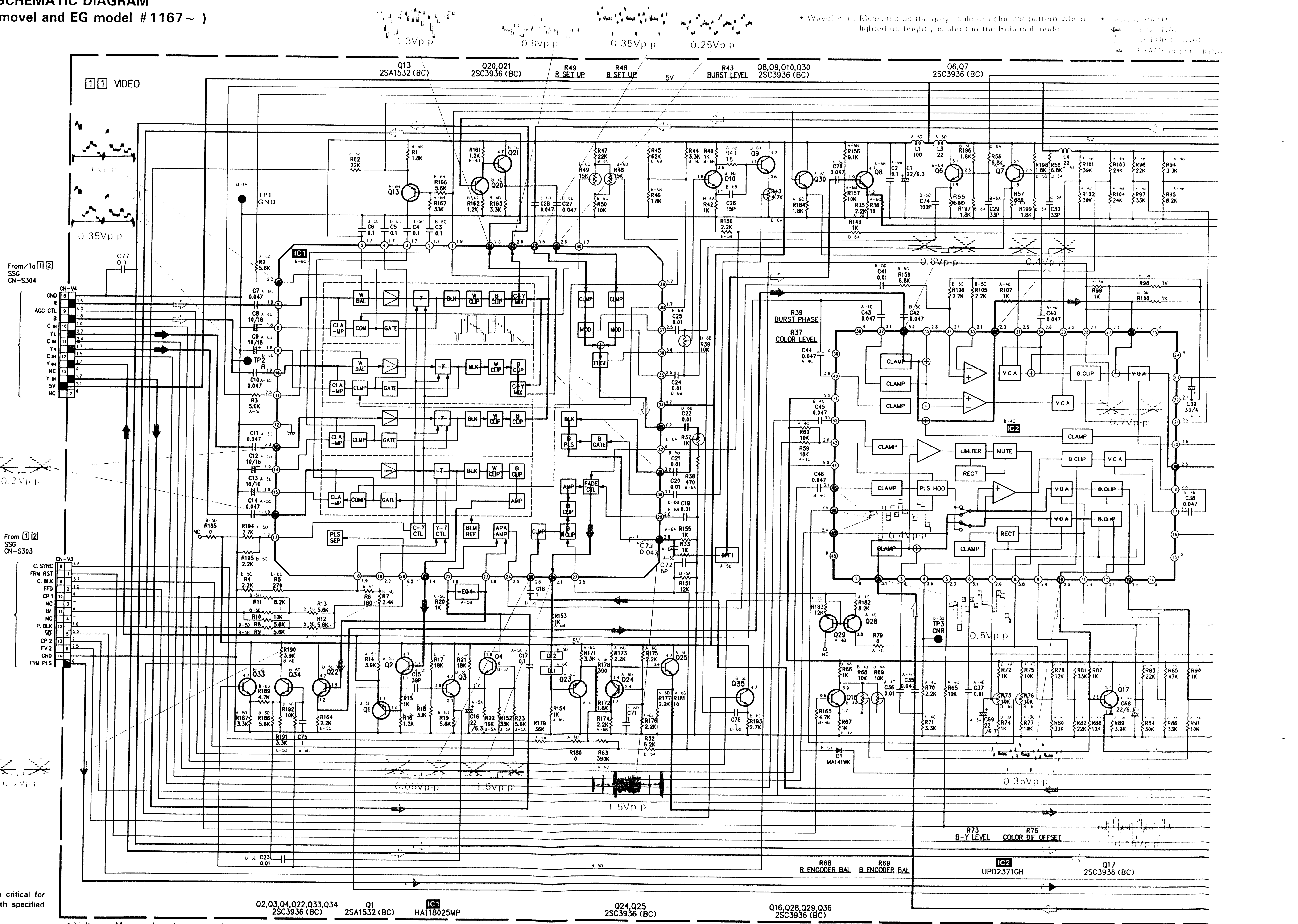
—Front —
(A)



Point Ⓓ of
GATE BOARD
R235
L3
R44
R50
IC3
16
9
7
ⓒ
R64
C35
L2
C47
C209
C210
20
10
1
11
CN-V1
CN-V2
CN-V4
D203
D202
R217
R215
R232
R231
R234
C213
L201
C214
C203
C27
C8
C26
C9
C12
C13
C7
C10
C11
C14
C17
R20
R3
R2
R4
R59
R60
C34
R76
R77
C37
C6
C63
C60
C59
C43
C44
R182
R82
R81
R65
C66
C65
C64
C53
C52
C62
Q8
R36
Q30
R177
R174
ⓐ
C39
R183
R107
Q28
R79
R143
R156
Q27
R178
R172
Q29
R101
R78
R70
R161
R173
R102
R80
C36
R142
Q24
R180
C2
EQ1
R99
C40
R104
R71
R122
C70
R175
R93
R103
R86
D2
R126
C58
BPF
R33
C1
R179
R176
C16
R89
R96
R84
R97
R85
D8
R106
R120
C56
R119
R224
Q26
R118
R155
Q17
R83
R87
R109
R88
C68
C69
R117
R221
C57
C20
14
8
CN-V3
CN-V6
R115
R112
R168
IC5
R169
R170
R116
R220
R219
R212
CN-V5
R206
IC206
R203
R205
R204
33
34
23
12
44
VIDEO PWB ASS'Y YB20220 G1-02
VIDEO PWB YB20220-01-02
D
C
B
A
6
5
4
3
2
1

5.18 VIDEO SCHEMATIC DIAGRAM
(for EK movel and EG model # 1167~)

- Waveform : Measured as the grey scale or color bar pattern which lighted up brightly is short in the Rehersal mode.



SIGNAL PATH
Y SIGNAL
COLOR SIGNAL
FRAME PULSE SIGNAL
1 1 VIDEO
1.3Vp-p
0.8Vp-p
0.35Vp-p
0.25Vp-p
Q13 2SA1532 (BC)
Q20,Q21 2SC3936 (BC)
R49 R SET UP
R48 B SET UP
R43 BURST LEVEL
Q8,Q9,Q10,Q30 2SC3936 (BC)
Q6,Q7 2SC3936 (BC)
5V
TP1 GND
TP2
From/To 1 2 SSG CN-S304
CN-V4
GND
R
AGC CTL
B
C IN
YL
C IN
YH
C IH
Y IN
NC
Y IH
5V
NC
From 1 2 SSG CN-S303
CN-V3
C. SYNC
FRM RST
C. BLK
FFD
CP 1
NC
BF
NC
P. BLK
VD
CP 2
FV 2
GND
FRM PLS
IC1
W BAL
CLIP
BLK
W CLIP
B CLIP
C-Y MIX
CLA -MP
COM
GATE
CLAMP
COMP
AMP
PLS SEP
C-T CTL
Y-T CTL
BLM REF
APA AMP
MOD
EDGE
B PLS
B GATE
FADE CTL
BPF1
EQ1
R39 BURST PHASE
R37 COLOR LEVEL
IC2
VCA
B.CLIP
LIMITER
MUTE
RECT
PLS HOO
TP3 CNR
0.6Vp-p
0.4Vp-p
0.7Vp-p
0.4Vp-p
0.5Vp-p
0.2Vp-p
0.35Vp-p
0.6Vp-p
0.65Vp-p
1.5Vp-p
1.5Vp-p
0.35Vp-p
0.15Vp-p
D1 MA141WK
R73 B-Y LEVEL
R76 COLOR DIF OFFSET
R68 R ENCODER BAL
R69 B ENCODER BAL
IC2 UPD2371GH
Q17 2SC3936 (BC)
Q2,Q3,Q4,Q22,Q33,Q34 2SC3936 (BC)
Q1 2SA1532 (BC)
IC1 HA118025MP
Q24,Q25 2SC3936 (BC)
Q16,Q28,Q29,Q36 2SC3936 (BC)

Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

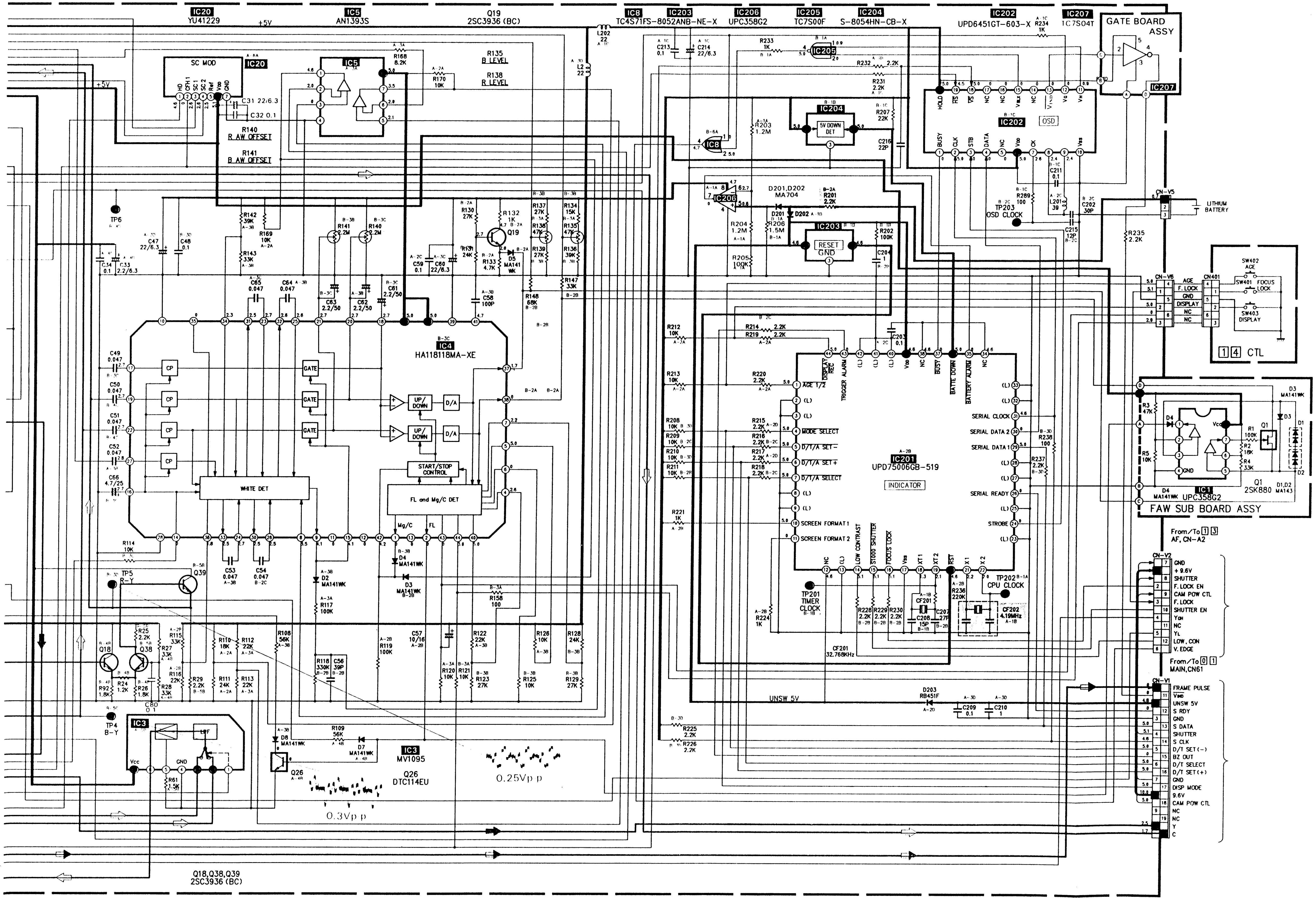
- Voltage : Measured as the grey scale or color bar pattern which lighted up brightly is short in the Rehersal mode.

- Address of chip parts
  A - 1D
  Address
  A : Front
  B : Rear

- Waveform : Measured as the grey scale or color bar pattern which lighted up brightly is short in the Rehersal mode.

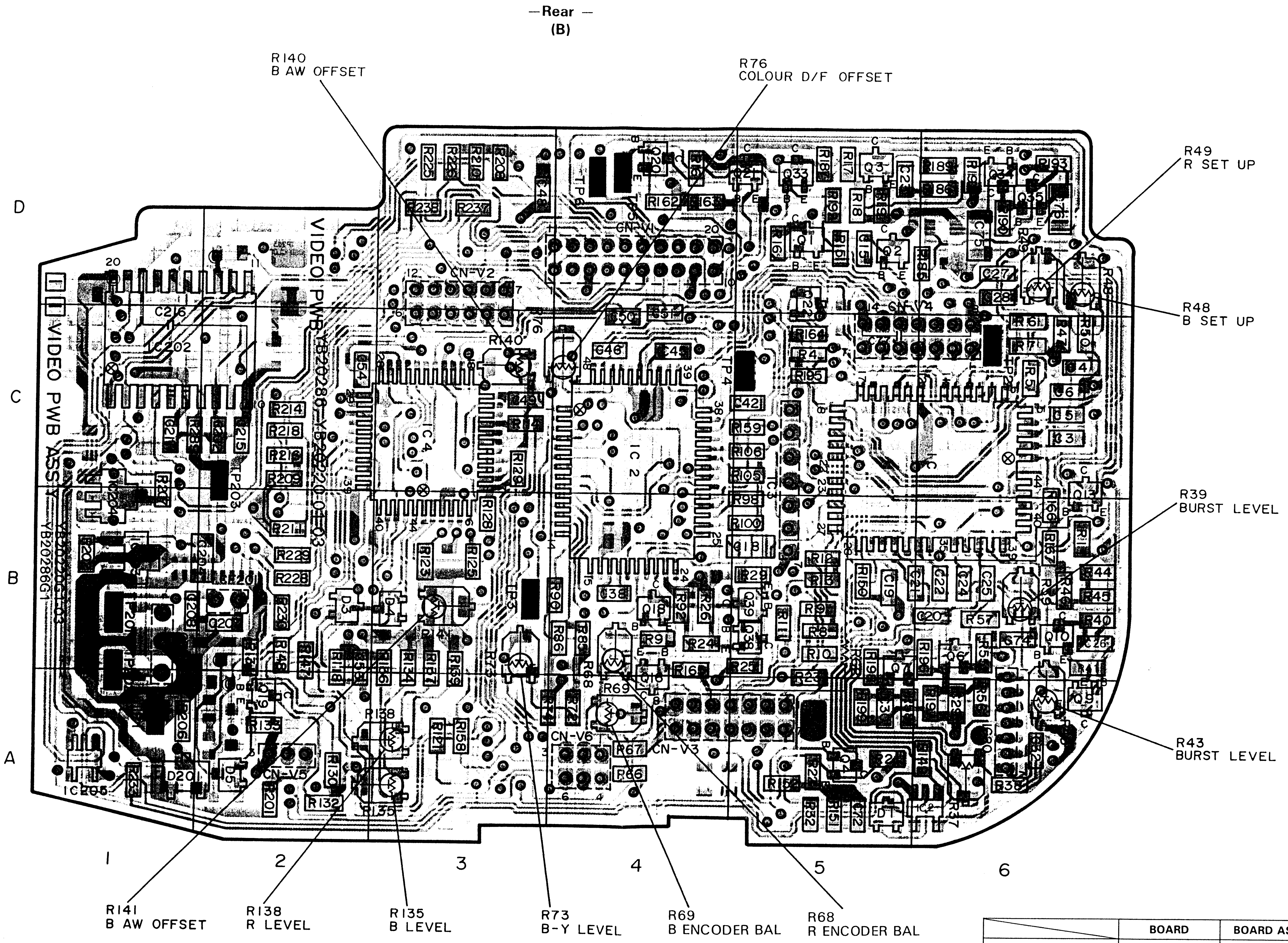
- SIGNAL PATH
  Y SIGNAL
  COLOR SIGNAL
  FRAME PULSE SIGNAL

- **Shaded (▨) parts are critical for safety. Replace only with specified part numbers.**


IC20 YU41229
+5V
IC5 AN1393S
Q19 2SC3936 (BC)
IC8 TC4S71FS-8052ANB-NE-X
IC203
IC206 UPC358G2
IC205 TC7S00F
IC204 S-8054HN-CB-X
IC202 UPD6451GT-603-X
R234 1K
IC207 TC7S04T
GATE BOARD ASSY
SC MOD
C31 22/6.3
C32 0.1
R140 R AW OFFSET
R141 B AW OFFSET
R135 B LEVEL
R138 R LEVEL
R168 8.2K
R170 10K
L202 22
L2 22
C213 0.1
C214 22/6.3
R233 1K
R232 2.2K
R231 2.2K
R207 22K
5V DOWN DET
R203 1.2M
C216 22P
OSD
TP6
C47 22/6.3
C48 0.1
C34 0.1
C33 2.2/6.3
R142 39K
R169 10K
R143 33K
R130 27K
R132 1K
R137 27K
R134 15K
R138 47K
R135 47K
R139 27K
R136 39K
R131 24K
R133 4.7K
D5 MA141WK
C59 0.1
C60 22/6.3
C65 0.047
C64 0.047
C63 2.2/50
C62 2.2/50
C61 2.2/50
C58 100P
R147 33K
R148 68K
IC4 HA118118MA-XE
D201, D202 MA704
R201 2.2K
D202
R204 1.2M
R206 1.5M
RESET GND
R202 100K
R205 100K
C204 1
R289 100
TP203 OSD CLOCK
C211 0.1
L201 39
C202 30P
C215 12P
R235 2.2K
CN-V5
LITHIUM BATTERY
C49 0.047
C50 0.047
C51 0.047
C52 0.047
C66 4.7/25
CP
GATE
UP/DOWN
D/A
START/STOP CONTROL
WHITE DET
FL and Mg/C DET
Mg/C
FL
R212 10K
R213 10K
R214 2.2K
R219 2.2K
C203 0.1
R220 2.2K
R208 10K
R209 10K
R210 10K
R211 10K
R215 2.2K
R216 2.2K
R217 2.2K
R218 2.2K
R221 1K
AGE 1/2
MODE SELECT
D/T/A SET-
D/T/A SET+
D/T/A SELECT
SCREEN FORMAT 1
SCREEN FORMAT 2
DISPLAY
REC
TRIGGER ALARM
BATTE DOWN
BATTERY ALARM
BUSY
SERIAL CLOCK
SERIAL DATA 2
SERIAL DATA 1
SERIAL READY
STROBE
IC201 UPD75006GB-519
INDICATOR
R238 100
R237 2.2K
LOW CONTRAST
S1000 SHUTTER
FOCUS LOCK
XT1
XT2
RST
X1
X2
TP201 TIMER CLOCK
R224 1K
R228 2.2K
R229 2.2K
R230 2.2K
CF201
C208 15P
C207 27P
CF202 4.19MHz
R236 220K
TP202 CPU CLOCK
CF201 32.768KHz
CN-V6
CN401
AGE
F.LOCK
GND
DISPLAY
NC
SW402 AGE
SW401 FOCUS LOCK
SW403 DISPLAY
1 4 CTL
D3 MA141WK
R3 47K
D4
R5 10K
R1 100K
Q1
R2 18K
R4 33K
Q1 2SK880
D1, D2 MA143
D4 MA141WK
IC1 UPC358G2
FAW SUB BOARD ASSY
From/To 1 3 AF, CN-A2
CN-V2
GND
+9.6V
SHUTTER
F.LOCK EN
CAM POW CTL
F.LOCK
SHUTTER EN
YOH
NC
YL
LOW, CON
V.EDGE
From/To 0 1 MAIN, CN61
CN-V1
FRAME PULSE
VDD
UNSW 5V
S RDY
GND
S DATA
SHUTTER
S CLK
D/T SET(-)
BZ OUT
D/T SELECT
D/T SET(+)
GND
DISP MODE
9.6V
CAM POW CTL
NC
NC
Y
C
R114 10K
TP5 R-Y
Q39
C53 0.047
C54 0.047
D2 MA141WK
D4 MA141WK
D3 MA141WK
R117 100K
R158 100
Q18
Q38
R25 2.2K
R115 33K
R27 33K
R116 22K
R24 1.2K
R26 1.8K
R28 33K
R92 1.8K
R29 2.2K
C80 0.1
R110 18K
R112 22K
R111 24K
R113 22K
R108 56K
R118 330K
C56 39P
R119 100K
C57 10/16
R120 10K
R121 10K
R122 22K
R123 27K
R125 10K
R126 10K
R128 24K
R129 27K
TP4 B-Y
IC3
LPF
Vcc
GND
R61 1.5K
D8 MA141WK
R109 56K
D7 MA141WK
IC3 MV1095
Q26 DTC114EU
0.25Vp-p
0.3Vp-p
UNSW 5V
D203 RB451F
C209 0.1
C210 1
R225 2.2K
R226 2.2K
Q18, Q38, Q39 2SC3936 (BC)

- Voltage : Measured as the grey scale or color bar pattern which lighted up brightly is short in the Rehersal mode.

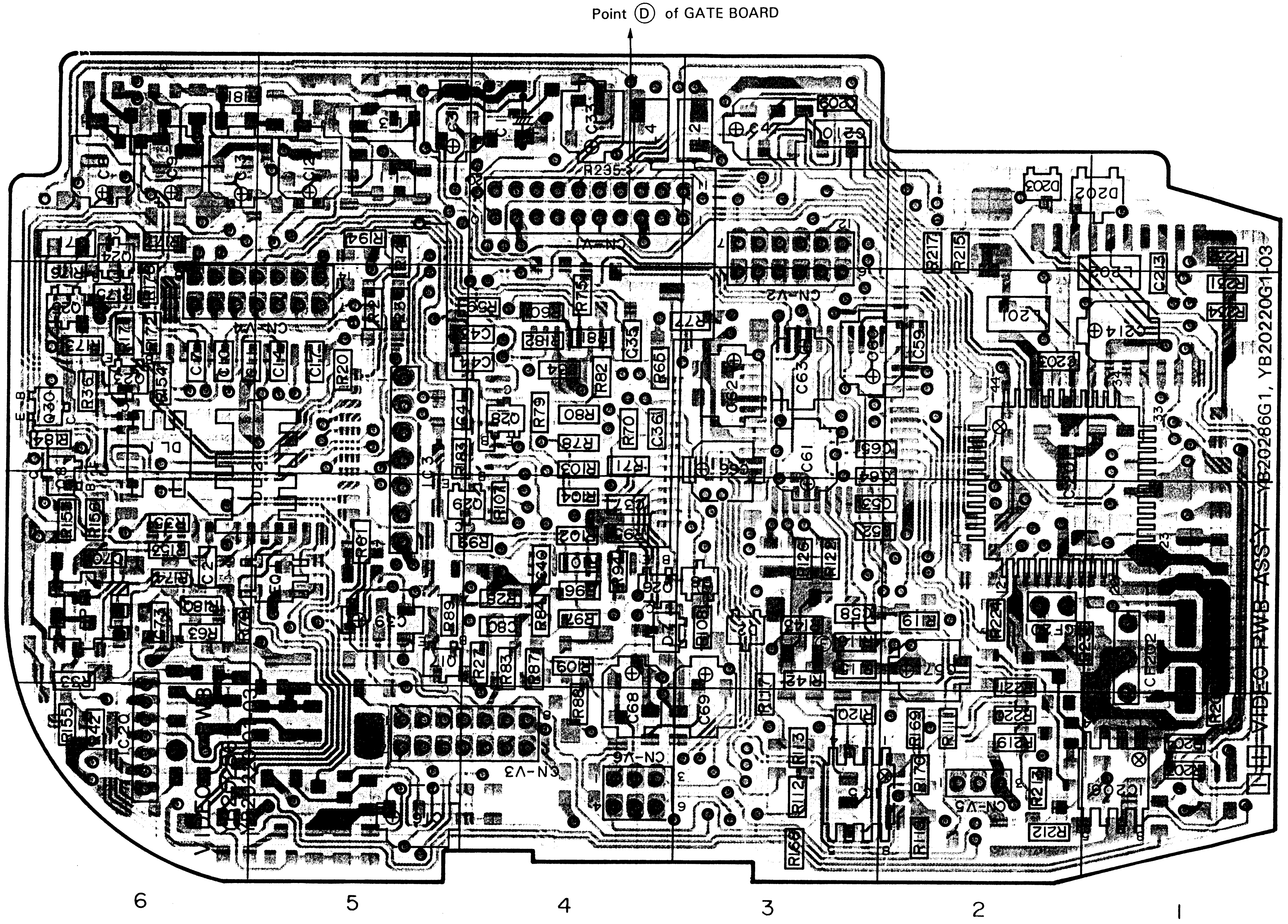
5.19 VIDEO AND FAW SUB CIRCUIT BOARDS
(for EK model and EG model #1167~)


—Rear —
(B)
R140
B AW OFFSET
R76
COLOUR D/F OFFSET
R49
R SET UP
R48
B SET UP
R39
BURST LEVEL
R43
BURST LEVEL
R141
B AW OFFSET
R138
R LEVEL
R135
B LEVEL
R73
B-Y LEVEL
R69
B ENCODER BAL
R68
R ENCODER BAL
D
C
B
A
1
2
3
4
5
6
VIDEO PWB YB20280-YB20220-03
VIDEO PWB ASSY YB20220G1-03 YB20286G1
IC2
IC202
CN-V1
CN-V2
CN-V3
CN-V4
CN-V5
CN-V6

	BOARD	BOARD ASSY
EK model #1~1612	YB20220-01-03	YB20220G1-03
EG model #1167~ EK model #1163~	YB20286	YB20286G1

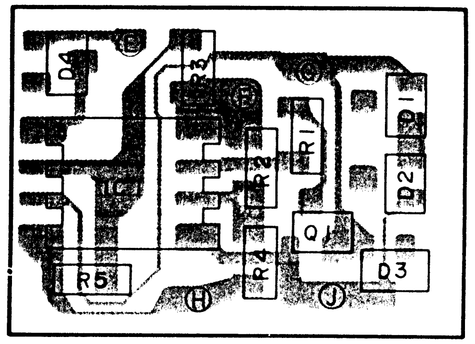
—Front—
(A)

Point Ⓓ of GATE BOARD



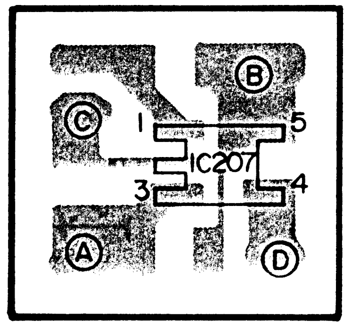
VIDEO PWB ASSY, YB20286G1, YB20220G1-03
CN-V1
CN-V2
CN-V3
CN-V4
CN-V5
CN-V6
IC202
IC203
L201
LF202
D202
D203
R235
D
C
B
A
6
5
4
3
2
1

<FAW SUB>



D4
R3
R1
R2
D1
D2
Q1
R4
R5
D3
Ⓖ
Ⓗ
Ⓙ

<GATE>

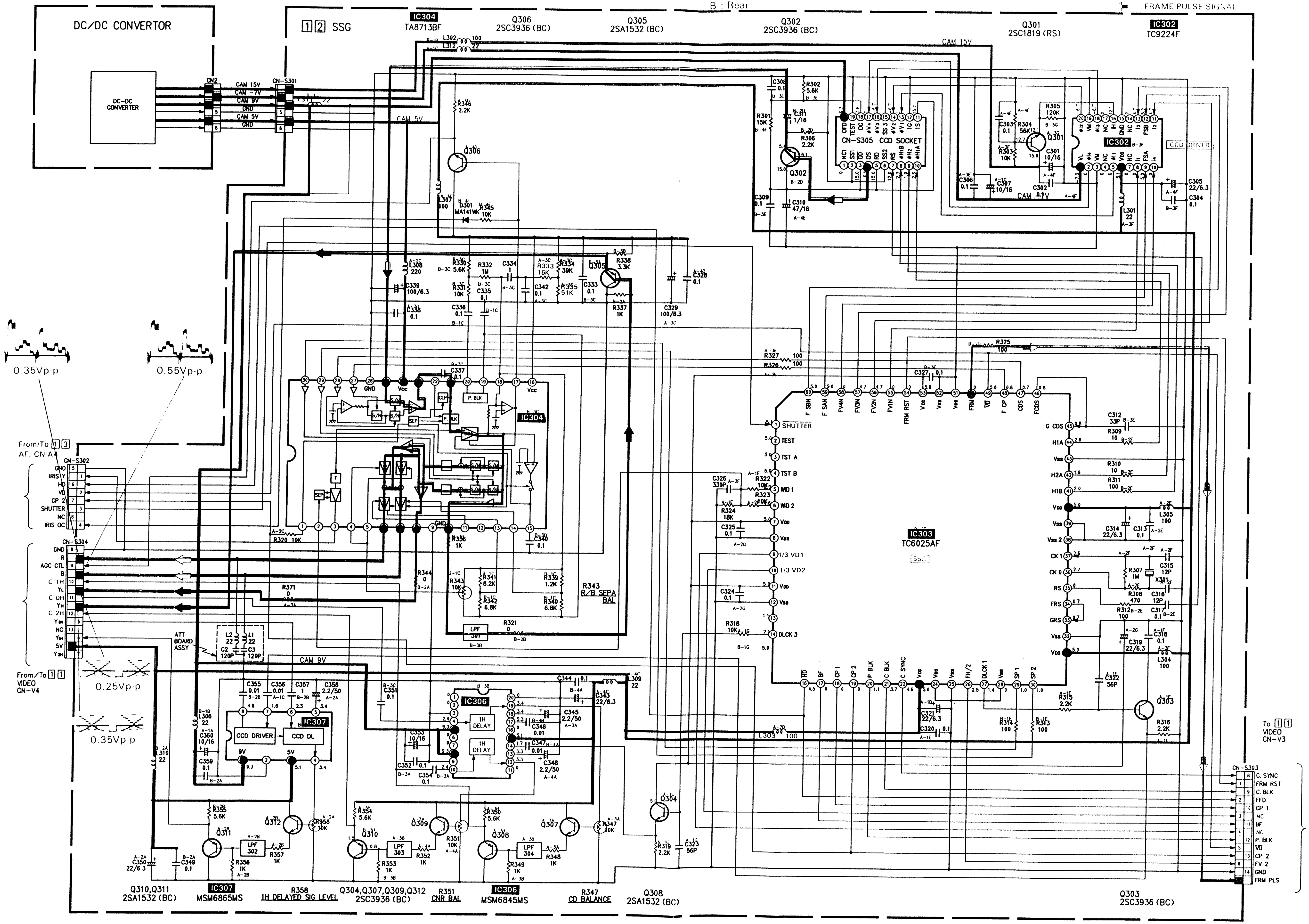


5.20 SSG SCHEMATIC DIAGRAM
(for EG model # 1 ~ 1166)

- Address of chip parts
  A - 1D
  Address
  A : Front
  B : Rear

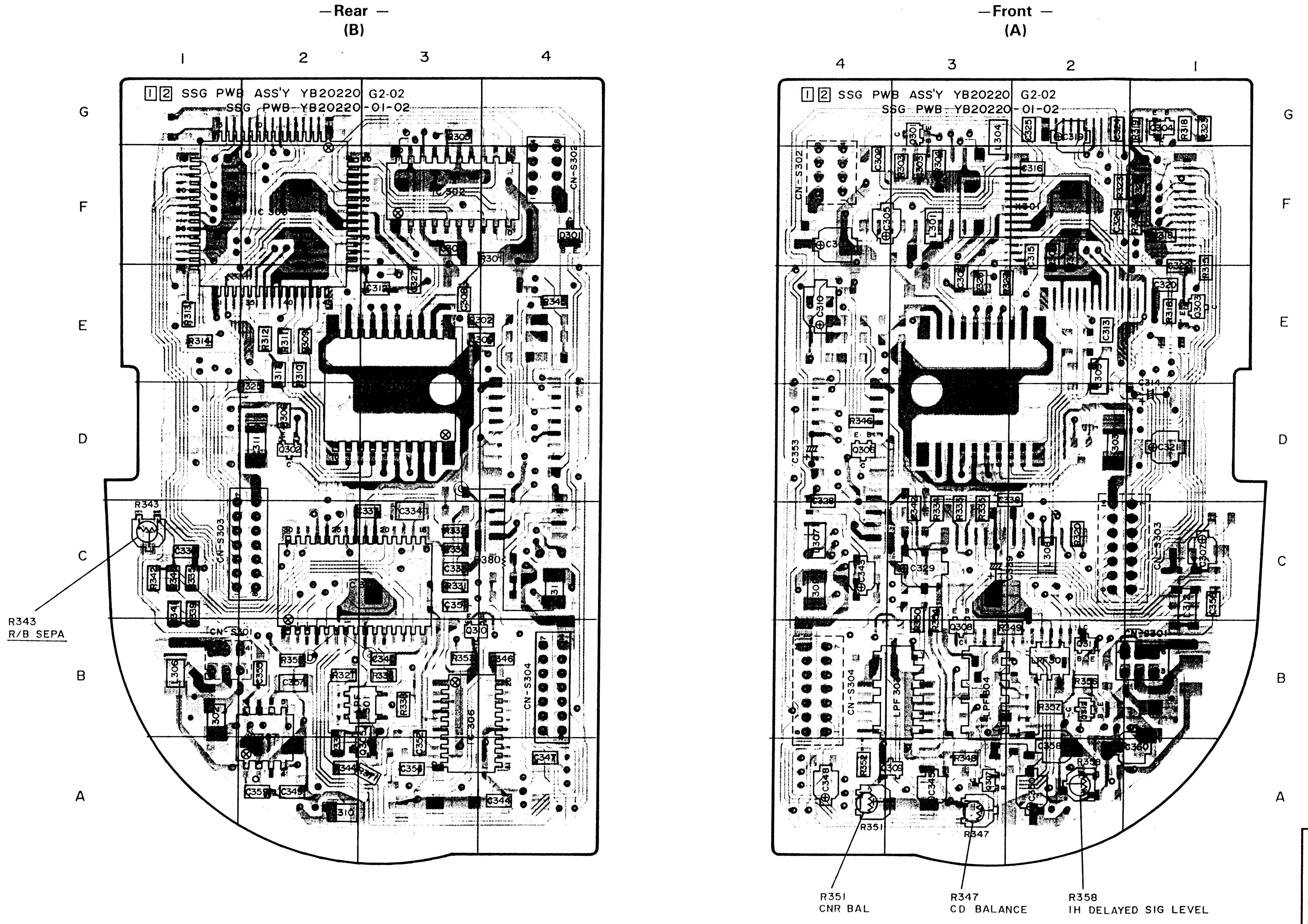
- Voltage/Waveform : Measured as the grey scale or color bar pattern which lighted up brightly is short in the Rehersal mode.

- SIGNAL PATH
  🡸 Y SIGNAL
  ⇦ COLOR SIGNAL
  ◀ Y/COLOR SIGNAL
  ⮜ FRAME PULSE SIGNAL

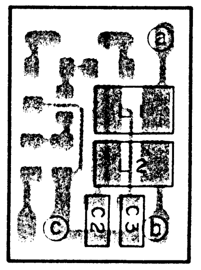

DC/DC CONVERTOR
DC-DC CONVERTER
CN2
CN-S301
CAM 15V
CAM -7V
CAM 9V
GND
CAM 5V
GND
1 2 SSG
IC304
TA8713BF
Q306
2SC3936 (BC)
Q305
2SA1532 (BC)
Q302
2SC3936 (BC)
Q301
2SC1819 (RS)
IC302
TC9224F
CAM 15V
CAM 5V
CAM -7V
CN-S305 CCD SOCKET
CCD DRIVER
IC303
TC6025AF
SSG
0.35Vp-p
0.55Vp-p
0.25Vp-p
0.35Vp-p
From/To 1 3
AF. CN A4
CN-S302
GND
IRIS Y
HD
VD
CP 2
SHUTTER
NC
IRIS OC
CN-S304
GND
R
AGC CTL
B
C 1H
YL
C 0H
YH
C 2H
YBH
NC
YWH
5V
YZH
From/To 1 1
VIDEO
CN-V4
ATT BOARD ASSY
CAM 9V
IC307
CCD DRIVER
CCD DL
IC306
1H DELAY
R343
R/B SEPA BAL
LPF 301
LPF 302
LPF 303
LPF 304
P. BLK
CLP
S/H
SEP
GND
Vcc
SHUTTER
TEST
TST A
TST B
WID 1
WID 2
VDD
VSS
1/3 VD1
1/3 VD2
DLCK 3
G CDS
H1A
H2A
H1B
CK 1
CK 0
RS
FRS
GRS
F SBN
F SAN
FV4N
FV3N
FV2N
FV1N
FRM RST
FRM
VD
F CP
CDS
FCDS
HD
BF
CP 1
CP 2
P BLK
C BLK
C SYNC
FH/2
DLCK 1
SP 1
SP 2
To 1 1
VIDEO
CN-V3
CN-S303
C. SYNC
FRM RST
C. BLK
FFD
CP 1
NC
BF
NC
P. BLK
VD
CP 2
FV 2
GND
FRM PLS
Q310,Q311
2SA1532 (BC)
IC307
MSM6865MS
R358
1H DELAYED SIG LEVEL
Q304,Q307,Q309,Q312
2SC3936 (BC)
R351
CNR BAL
IC306
MSM6845MS
R347
CD BALANCE
Q308
2SA1532 (BC)
Q303
2SC3936 (BC)

5.21 SSG CIRCUIT BOARD
(for EG model #1 ~ 1166)

<SSG>


—Rear —
(B)
—Front —
(A)
1
2
3
4
G
F
E
D
C
B
A
1 2 SSG PWB ASS'Y YB20220 G2-02
SSG PWB YB20220-01-02
CN-S301
CN-S302
CN-S303
CN-S304
R343
R/B SEPA
R351
CNR BAL
R347
CD BALANCE
R358
1H DELAYED SIG LEVEL

<ATT>


ATT BOARD ASSY
YB20260A-C

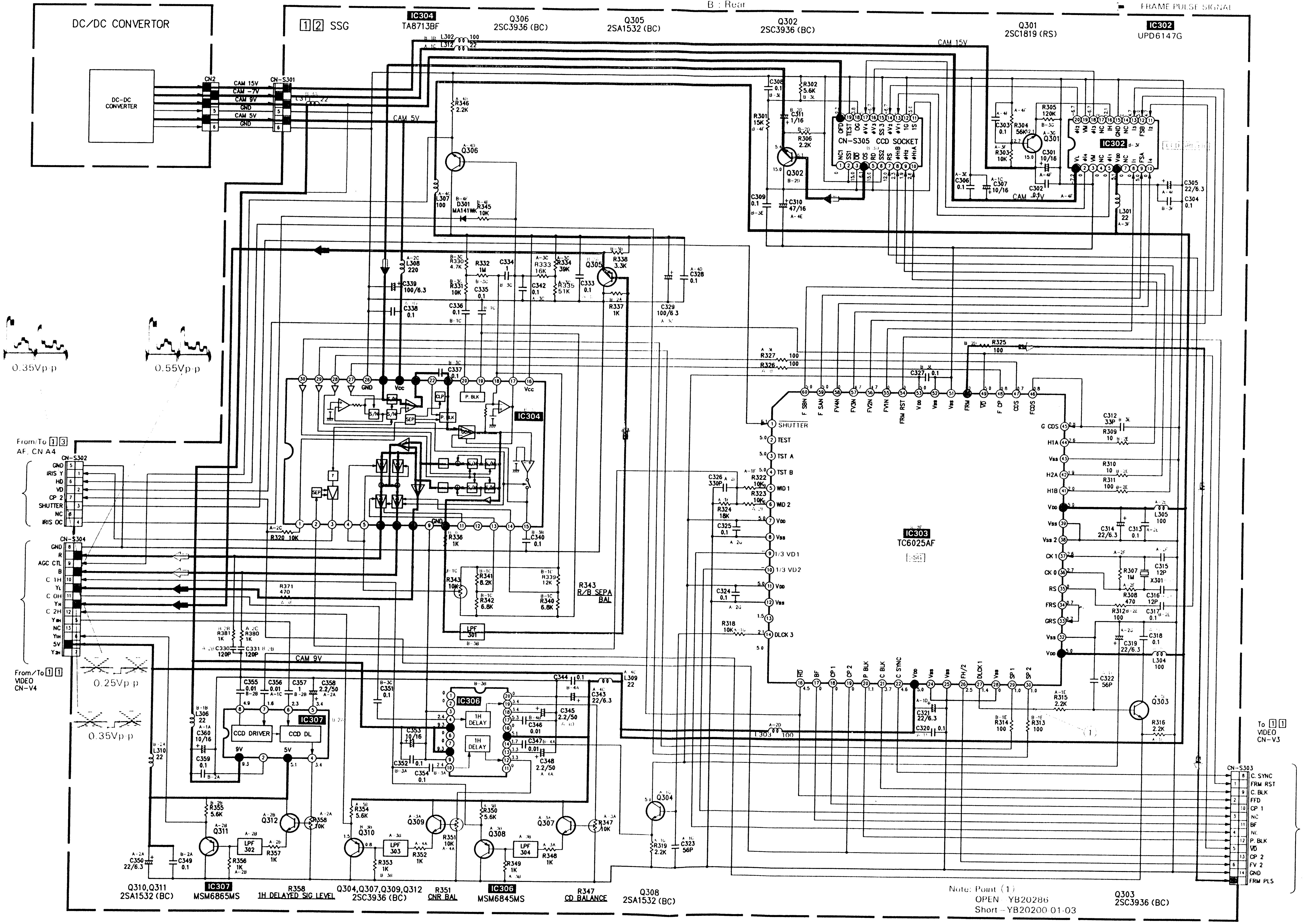
5.22 SSG SCHEMATIC DIAGRAM
(for EK model and EG model #1167~)

- Voltage : Measured as the grey scale or color bar pattern which lighted up brightly is short in the Rehersal mode.

- Address of chip parts
  A 1D
  └ Address
  └ A : Front
  B : Rear

- Waveform : Measured as the grey scale or color bar pattern which lighted up brightly is short in the Rehersal mode

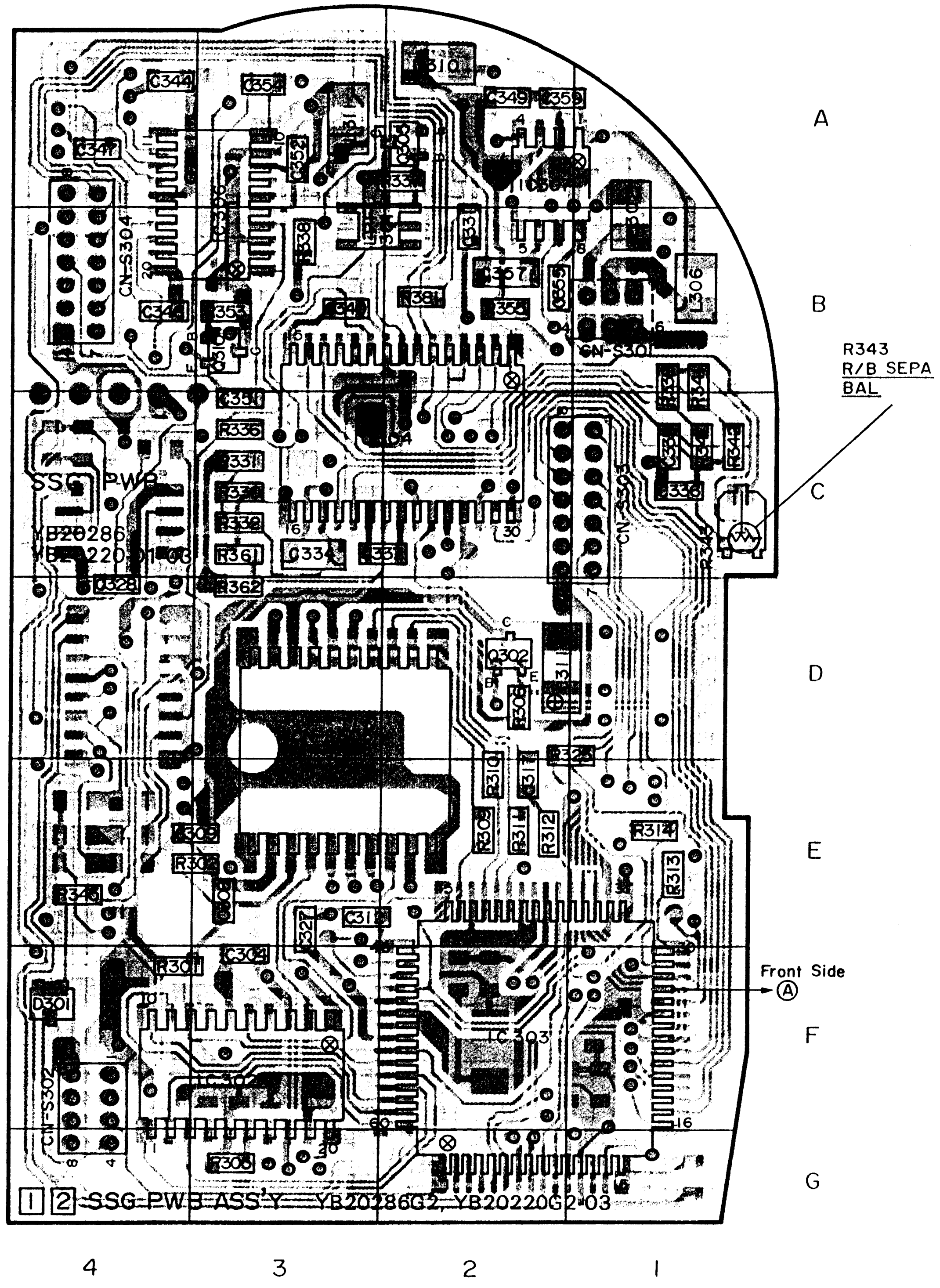
- SIGNAL PATH
  - Y SIGNAL
  - COLOR SIGNAL
  - Y/COLOR SIGNAL
  - FRAME PULSE SIGNAL


DC/DC CONVERTOR
DC-DC CONVERTER
CN2
CN-S301
CAM 15V
CAM -7V
CAM 9V
GND
CAM 5V
GND
1 2 SSG
IC304
TA8713BF
Q306
2SC3936 (BC)
Q305
2SA1532 (BC)
Q302
2SC3936 (BC)
Q301
2SC1819 (RS)
IC302
UPD6147G
CAM 15V
CAM 5V
CN-S305 CCD SOCKET
IC303
TC6025AF
0.35Vp-p
0.55Vp-p
0.25Vp-p
0.35Vp-p
From/To 1 3
AF. CN A4
CN-S302
GND
IRIS Y
HD
VD
CP 2
SHUTTER
NC
IRIS OC
CN-S304
GND
R
AGC CTL
B
C 1H
YL
C 0H
YH
C 2H
Y0H
NC
Y1H
5V
Y2H
From/To 1 1
VIDEO
CN-V4
R343
R/B SEPA
BAL
LPF 301
CAM 9V
CCD DRIVER
CCD DL
IC307
IC306
1H DELAY
1H DELAY
LPF 302
LPF 303
LPF 304
Q304
Q303
To 1 1
VIDEO
CN-V3
CN-S303
C. SYNC
FRM RST
C. BLK
FFD
CP 1
NC
BF
NC
P. BLK
VD
CP 2
FV 2
GND
FRM PLS
Q310,Q311
2SA1532 (BC)
IC307
MSM6865MS
R358
1H DELAYED SIG LEVEL
Q304,Q307,Q309,Q312
2SC3936 (BC)
R351
CNR BAL
IC306
MSM6845MS
R347
CD BALANCE
Q308
2SA1532 (BC)
Note: Point (1)
OPEN YB20286
Short - YB20200 01-03
Q303
2SC3936 (BC)

5.23 SSG CIRCUIT BOARD
(for EK model and EG model #1167~)

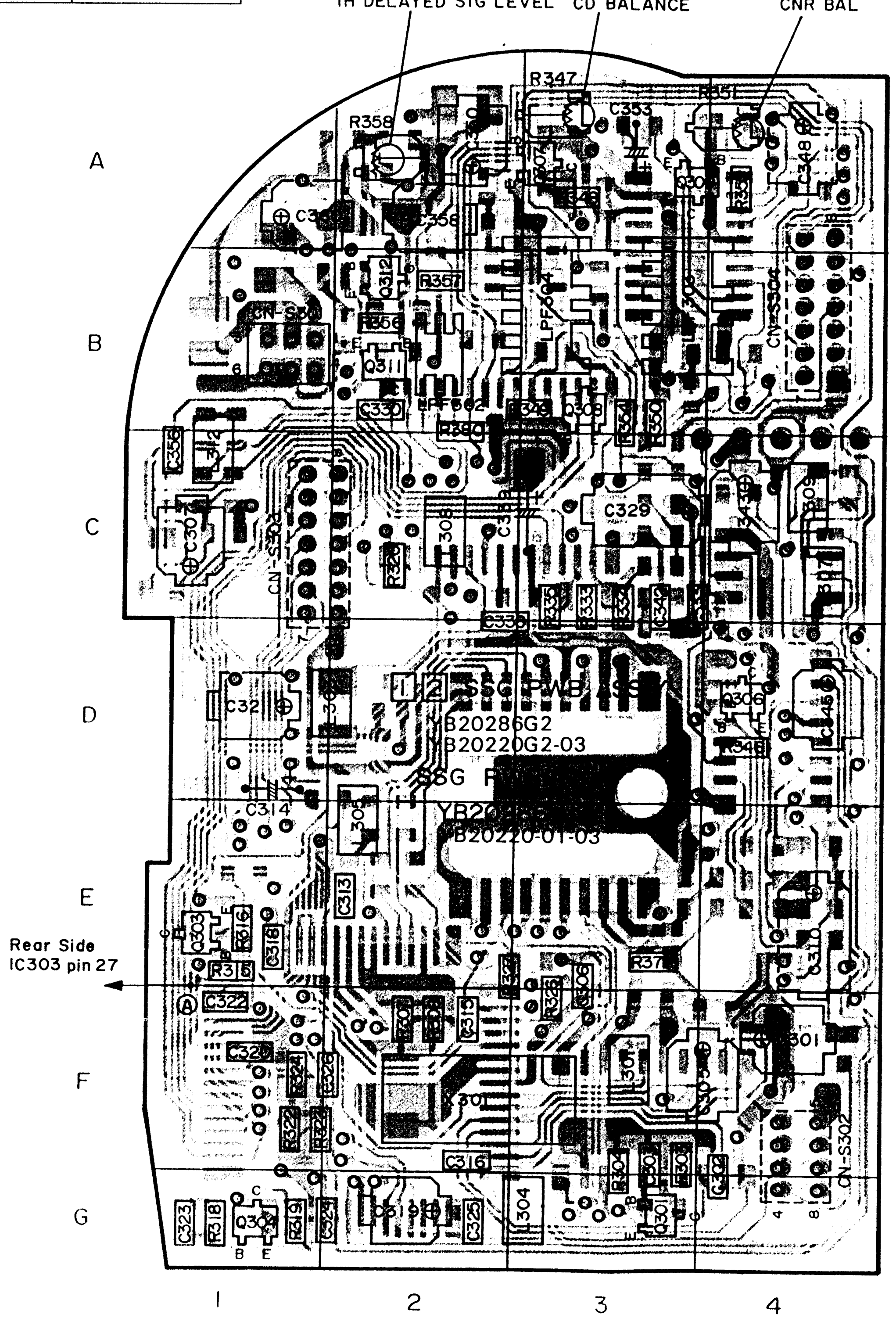
	BOARD	BOARD ASSY
EK model #1~1612	YB20220-01-03	YB20220G2-03
EG model #1167~ EK model #1163~	YB20286	YB20286G2

—Rear—
(B)



A
B
C
D
E
F
G
4
3
2
1
R343
R/B SEPA
BAL
Front Side
Ⓐ
SSG PWB
YB20286
YB20220-01-03
IC303
CN-S304
CN-S301
CN-S302
1 2 SSG-PWB-ASS'Y YB20286G2, YB20220G2-03

—Front—
(A)



R358
IH DELAYED SIG LEVEL
R347
CD BALANCE
R351
CNR BAL
A
B
C
D
E
F
G
Rear Side
IC303 pin 27
1
2
3
4
1 2 SSG PWB ASSY
YB20286G2
YB20220G2-03
SSG PWB
YB20286
YB20220-01-03
CN-S304
CN-S302

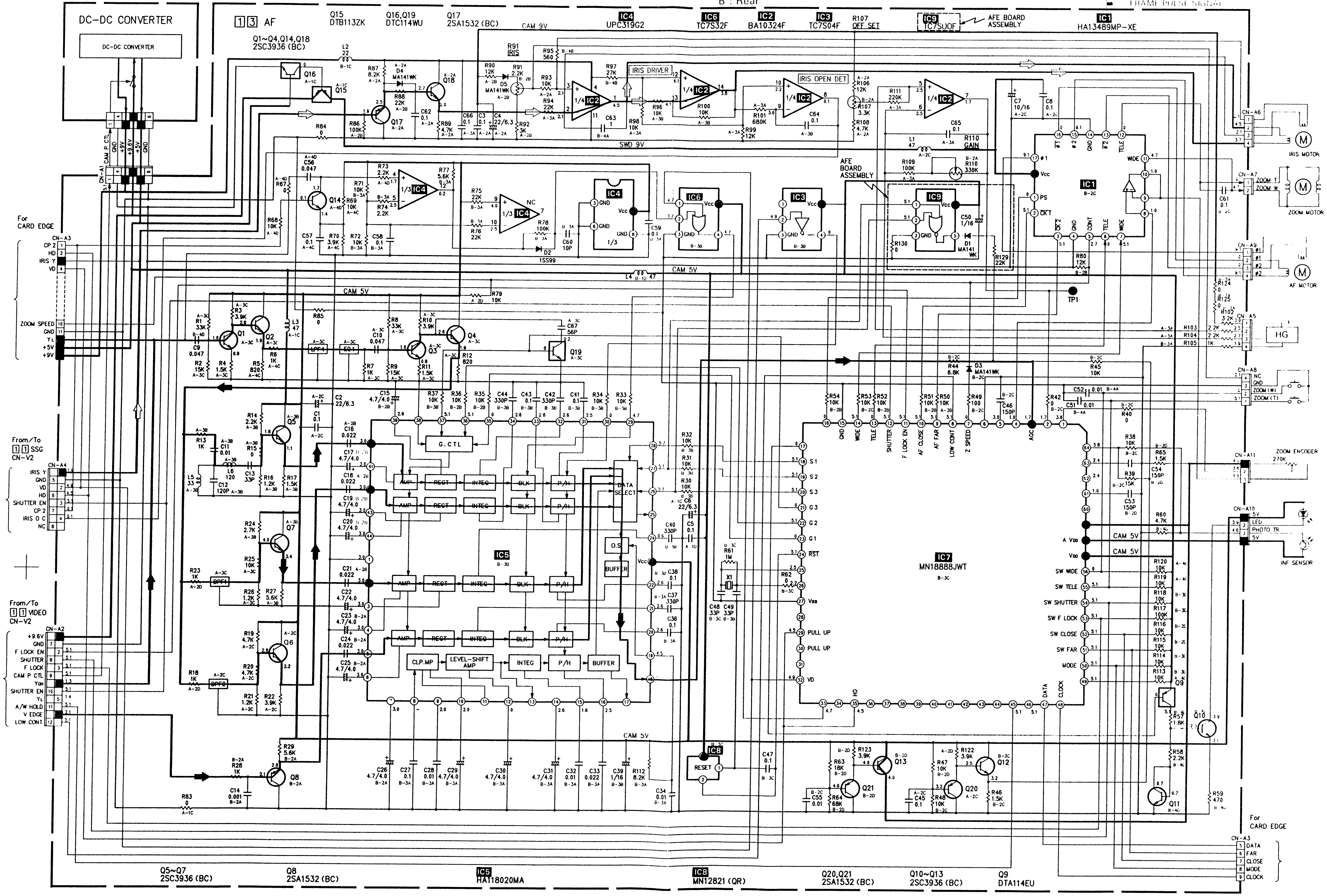
5.24 AF SCHEMATIC DIAGRAM

- Voltage : Measured as the grey scale or color bar pattern which lighted up brightly is short in the Rehersal mode.

- Address of chip parts
  A - 1D
  Address
  A : Front
  B : Rear

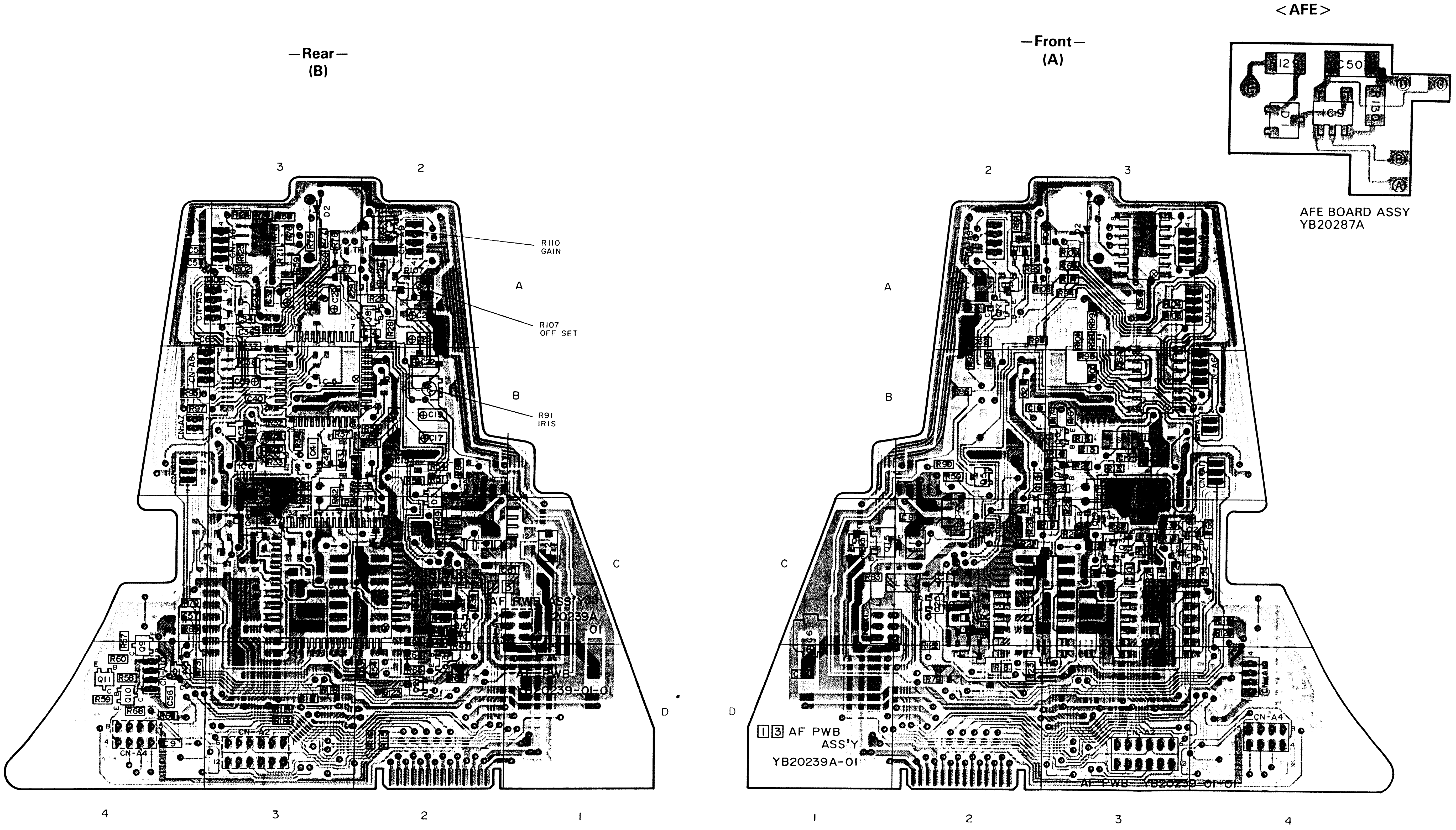
- Waveform : Measured as the grey scale or color bar pattern which lighted up brightly is short in the Rehersal mode.

- SIGNAL PATH
  ⬅ Y SIGNAL
  ⇦ COLOR SIGNAL
  ◀ Y COLOR SIGNAL
  ▬ FRAME PULSE SIGNAL



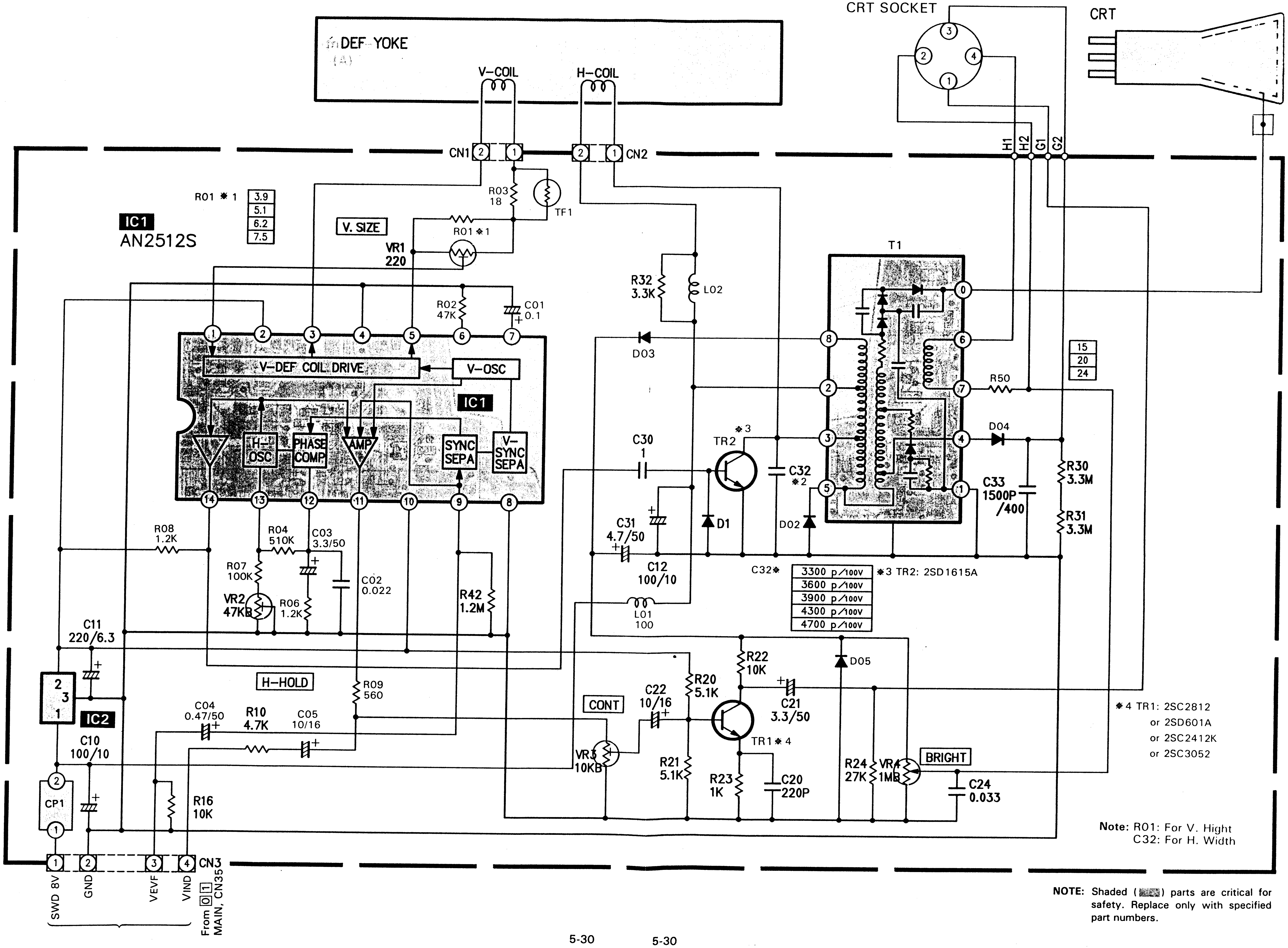
DC-DC CONVERTER
DC-DC CONVERTER
CN-A1
CAM P CTL
GND
+9.6V
+9V
+5V
GND
13 AF
Q1~Q4,Q14,Q18
2SC3936 (BC)
Q15
DTB113ZK
Q16,Q19
DTC114WU
Q17
2SA1532 (BC)
CAM 9V
IC4
UPC319G2
IC6
TC7S32F
IC2
BA10324F
IC3
TC7S04F
R107
OFF SET
IC9
TC7SU0F
AFE BOARD
ASSEMBLY
IC1
HA13489MP-XE
R91
IRIS
IRIS DRIVER
IRIS OPEN DET
R110
GAIN
SWD 9V
CN-A6
IRIS MOTOR
CN-A7
ZOOM T
ZOOM W
ZOOM MOTOR
CN-A9
AF MOTOR
TP1
CN-A5
HG
R103
R104
R105
CN-A8
NC
GND
ZOOM (W)
ZOOM (T)
CN-A11
ZOOM ENCODER
270K
CN-A10
5V
LED
PHOTO TR
5V
INF SENSOR
For
CARD EDGE
CN-A3
CP 2
HD
IRIS Y
VD
ZOOM SPEED
GND
YL
+5V
+9V
CAM 5V
From/To
11 SSG
CN-V2
CN-A4
IRIS Y
GND
VD
HD
SHUTTER EN
CP 2
IRIS O C
NC
From/To
11 VIDEO
CN-V2
CN-A2
+9.6V
GND
F LOCK EN
SHUTTER
F LOCK
CAM P CTL
YGH
SHUTTER EN
YL
A/W HOLD
V EDGE
LOW CONT
LPF1
BPF1
BPF2
BPF3
G.CTL
AMP
RECT
INTEG
BLK
P/H
DATA
SELECT
O.S
BUFFER
CLP.MP
LEVEL-SHIFT
AMP
INTEG
P/H
BUFFER
IC5
IC7
MN18888JWT
AVDD
VDD
SW WIDE
SW TELE
SW SHUTTER
SW F LOCK
SW CLOSE
SW FAR
MODE
S1
S2
S3
G3
G2
G1
RST
VSS
PULL UP
PULL UP
VD
GND
WIDE
TELE
SHUTTER
F LOCK EN
AF CLOSE
AF FAR
LOW CONT
Z SPEED
ACC
HD
DATA
CLOCK
IC8
RESET
X1
CAM 5V
For
CARD EDGE
CN-A3
DATA
FAR
CLOSE
MODE
CLOCK
Q5~Q7
2SC3936 (BC)
Q8
2SA1532 (BC)
IC5
HA118020MA
IC8
MN12821 (QR)
Q20,Q21
2SA1532 (BC)
Q10~Q13
2SC3936 (BC)
Q9
DTA114EU

5.25 AF CIRCUIT BOARD



—Rear—
(B)
—Front—
(A)
<AFE>
R110
GAIN
R107
OFF SET
R91
IRIS
A
B
C
D
1
2
3
4
AF PWB ASS'Y
YB20239A-01
13 AF PWB
ASS'Y
YB20239A-01
AF PWB YB20239-01-01
CN-A2
CN-A4
IC9
IC50
R130
D1
AFE BOARD ASSY
YB20287A

5.26 ELECTRICAL VIEWFINDER SCHEMATIC DIAGRAM


DEF YOKE
V-COIL
H-COIL
CRT SOCKET
CRT
CN1
CN2
CN3
H1
H2
G1
G2
R01 ✱ 1
3.9
5.1
6.2
7.5
IC1
AN2512S
V. SIZE
VR1
220
R01 ✱1
R03
18
TF1
R02
47K
C01
0.1
R32
3.3K
L02
D03
T1
V-DEF COIL DRIVE
V-OSC
H-OSC
PHASE COMP
AMP
SYNC SEPA
V-SYNC SEPA
15
20
24
R50
D04
C30
1
TR2
✱3
C32
✱2
C33
1500P
/400
R30
3.3M
R31
3.3M
C31
4.7/50
D1
D02
C12
100/10
C32✱
3300 p/100V
3600 p/100V
3900 p/100V
4300 p/100V
4700 p/100V
R08
1.2K
R04
510K
C03
3.3/50
R07
100K
C02
0.022
VR2
47KB
R06
1.2K
R42
1.2M
L01
100
C11
220/6.3
IC2
C10
100/10
CP1
H-HOLD
R09
560
C04
0.47/50
R10
4.7K
C05
10/16
R16
10K
CONT
VR3
10KB
C22
10/16
R20
5.1K
R21
5.1K
R22
10K
C21
3.3/50
TR1 ✱ 4
R23
1K
C20
220P
D05
R24
27K
VR4
1MB
BRIGHT
C24
0.033
SWD 8V
GND
VEVF
VIND
From 01 MAIN, CN35

✱3 TR2: 2SD1615A

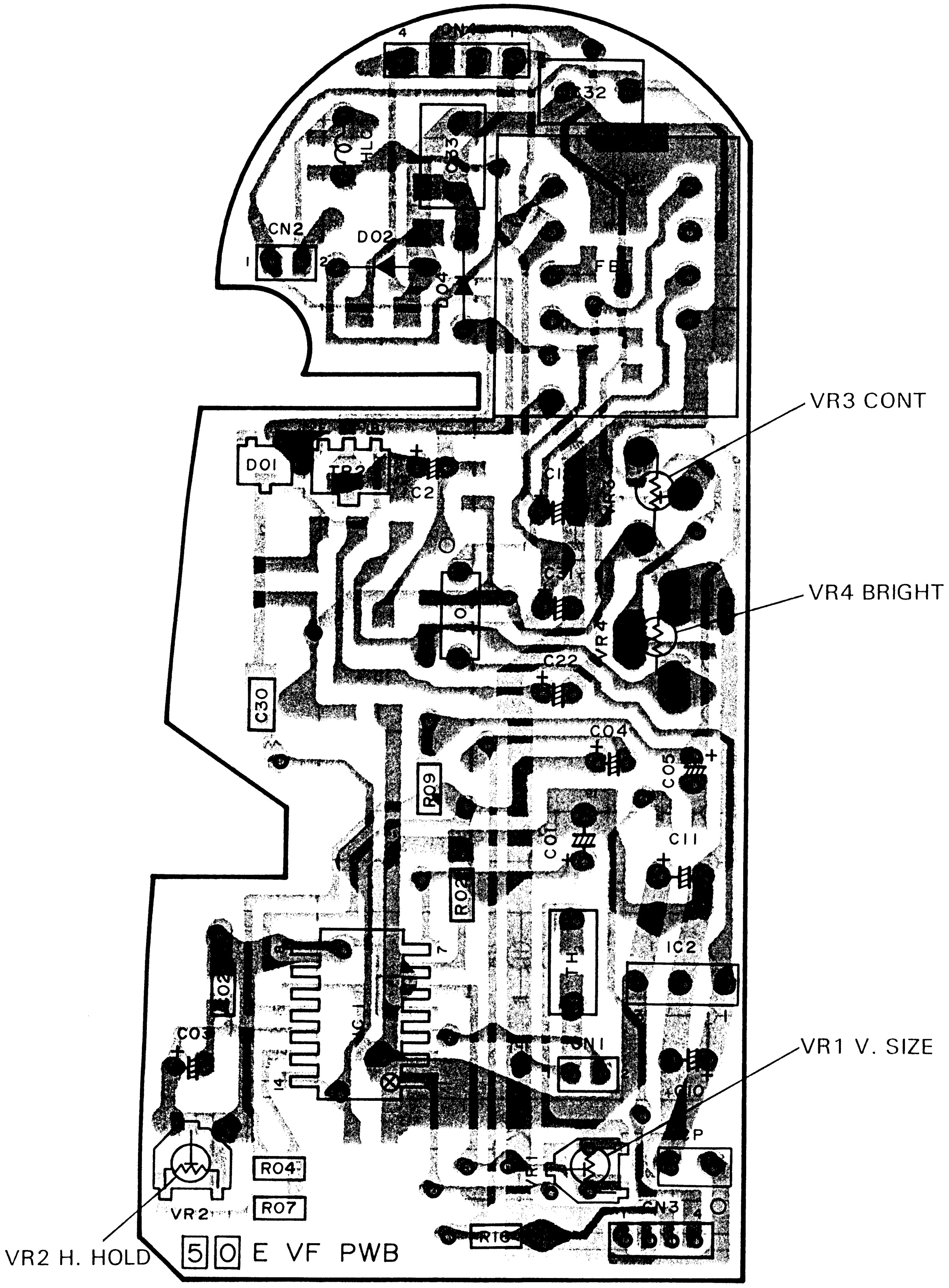
✱4 TR1: 2SC2812
or 2SD601A
or 2SC2412K
or 2SC3052

Note: R01: For V. Hight
C32: For H. Width

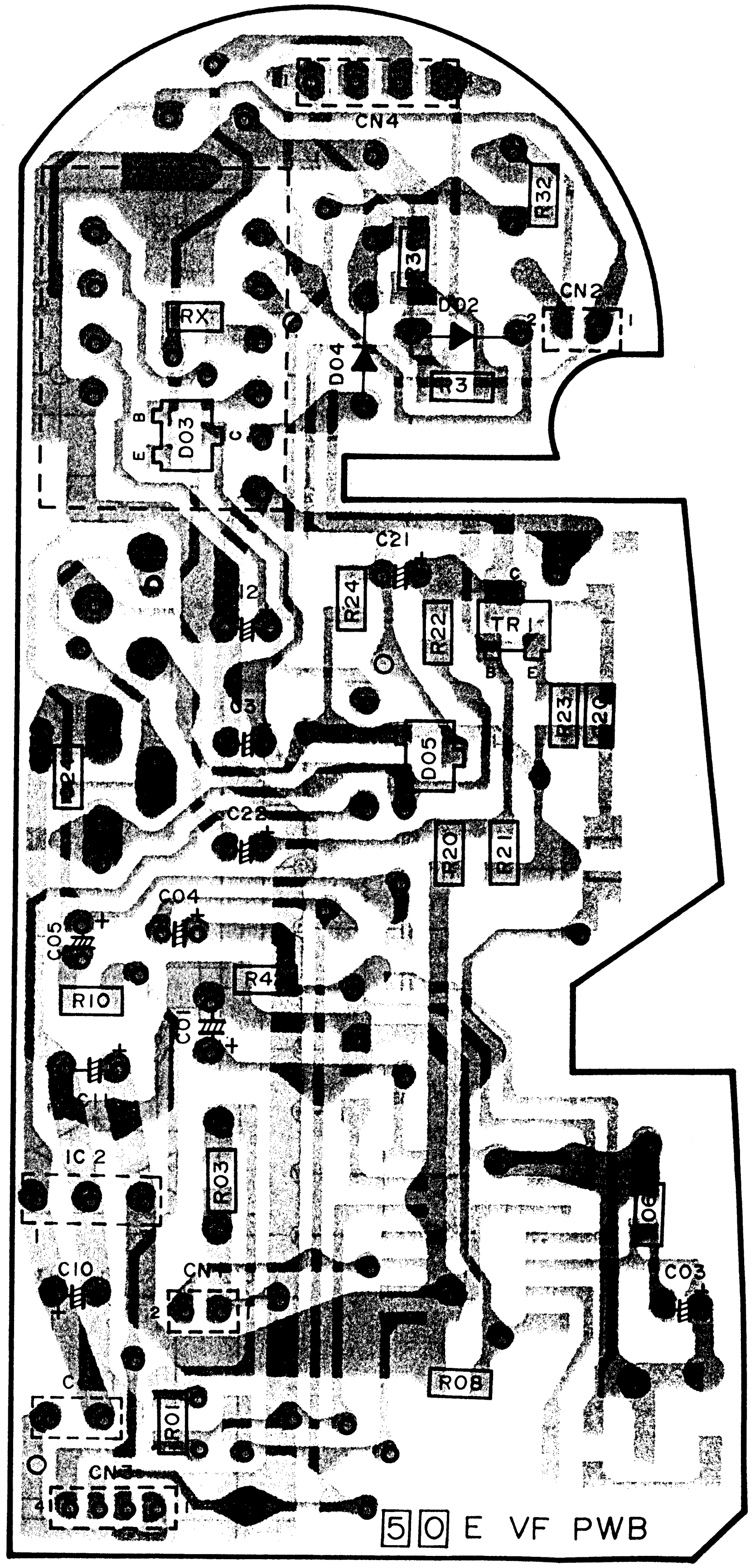
NOTE: Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

5.27 ELECTRICAL VIEWFINDER CIRCUIT BOARD

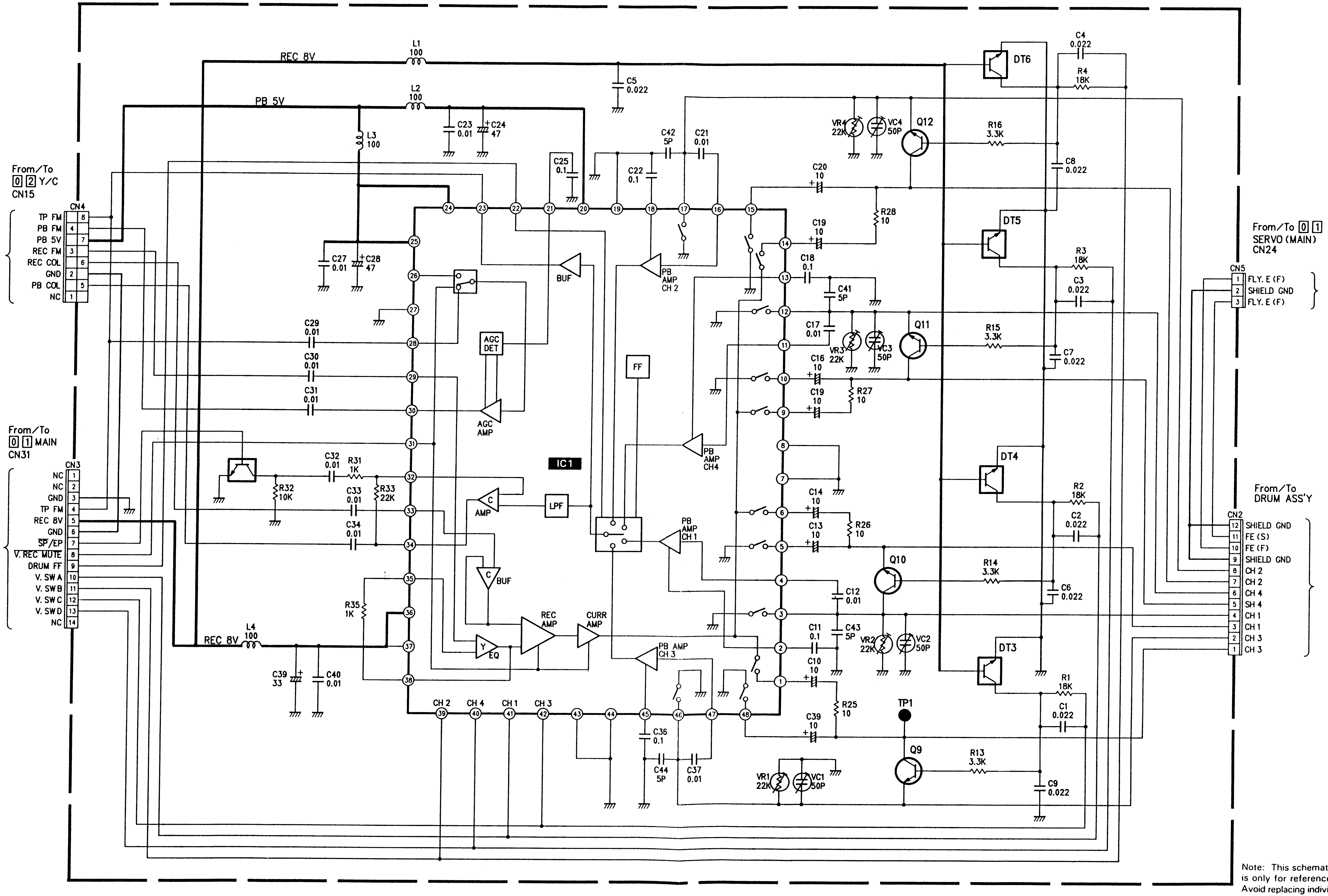
—Rear—


CN4
R32
CN2
D02
D04
FB
VR3 CONT
D01
TR2
C2
VR4 BRIGHT
C22
C30
C04
C05
R09
C07
C11
R03
IC2
CN1
C10
VR1 V. SIZE
R02
C03
R04
R07
VR2
CN3
R16
VR2 H. HOLD
50 E VF PWB

—Front—


CN4
R32
CN2
D02
R3
RX
D04
D03
E
B
C
C21
R24
R22
TR1
D05
C22
R20
R21
C05
C04
R10
R4
C07
C11
IC 2
R03
C10
CN1
R08
R01
CN3
C03
50 E VF PWB

5.28 PRE/REC SCHEMATIC DIAGRAM


REC 8V
PB 5V
L1 100
L2 100
L3 100
L4 100
C5 0.022
C23 0.01
C24 47
C25 0.1
C42 5P
C21 0.01
C22 0.1
C27 0.01
C28 47
C29 0.01
C30 0.01
C31 0.01
C32 0.01
R31 1K
R32 10K
C33 0.01
R33 22K
C34 0.01
R35 1K
C39 33
C40 0.01
C36 0.1
C44 5P
C37 0.01
IC1
BUF
PB AMP CH 2
AGC DET
AGC AMP
FF
PB AMP CH4
C AMP
LPF
PB AMP CH 1
C BUF
REC AMP
CURR AMP
Y EQ
PB AMP CH 3
CH 2
CH 4
CH 1
CH 3
From/To 0 2 Y/C CN15
CN4
TP FM
PB FM
PB 5V
REC FM
REC COL
GND
PB COL
NC
From/To 0 1 MAIN CN31
CN3
NC
NC
GND
TP FM
REC 8V
GND
SP/EP
V. REC MUTE
DRUM FF
V. SW A
V. SW B
V. SW C
V. SW D
NC
DT6
DT5
DT4
DT3
C4 0.022
R4 18K
R16 3.3K
C8 0.022
VR4 22K
VC4 50P
Q12
C20 10
R28 10
C19 10
C18 0.1
C41 5P
C17 0.01
VR3 22K
VC3 50P
Q11
R15 3.3K
C7 0.022
C16 10
R27 10
C19 10
C14 10
C13 10
R26 10
Q10
R14 3.3K
C6 0.022
C12 0.01
C11 0.1
C43 5P
VR2 22K
VC2 50P
C10 10
R25 10
C39 10
TP1
Q9
R13 3.3K
C9 0.022
VR1 22K
VC1 50P
R3 18K
C3 0.022
R2 18K
C2 0.022
R1 18K
C1 0.022
From/To 0 1 SERVO (MAIN) CN24
CN5
FLY. E (F)
SHIELD GND
FLY. E (F)
From/To DRUM ASS'Y
CN2
SHIELD GND
FE (S)
FE (F)
SHIELD GND
CH 2
CH 2
CH 4
SH 4
CH 1
CH 1
CH 3
CH 3

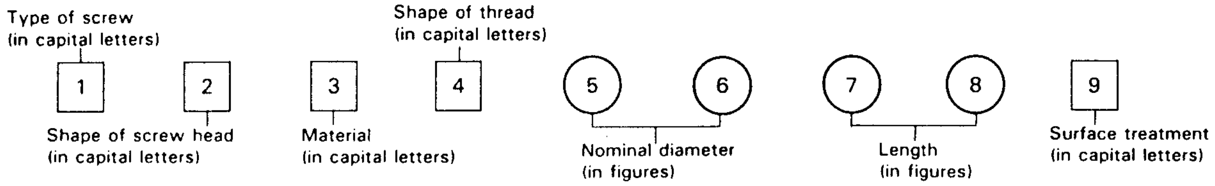
Note: This schematic diagram is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.

SECTION 6
EXPLODED VIEWS AND PARTS LIST

6.1 STANDARD PART NUMBER CODING

6.1.1 Screw coding

Standard screw part numbers are as follows.

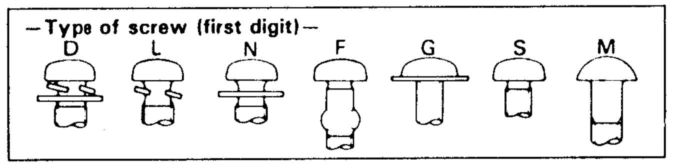

Type of screw (in capital letters)
Shape of thread (in capital letters)
1
2
3
4
5
6
7
8
9
Shape of screw head (in capital letters)
Material (in capital letters)
Nominal diameter (in figures)
Length (in figures)
Surface treatment (in capital letters)

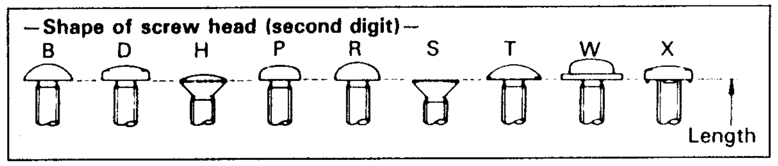
Type of screw (first digit)

S	Normal screws
D	Assembled machine screws (with plain and spring washers)
L	″ (with spring washer)
N	″ (with plain washer)
F	Feather screws
G	Washer head tapping screws
M	Wood screws

Shape of screw head (second digit)

B	Brazier head
D	Binding head
H	Oval countersunk head
P	Pan head
R	Round head
S	Flat head
T	Truss head
W	Washer head (machine screws)
X	Toothed head


—Type of screw (first digit)—

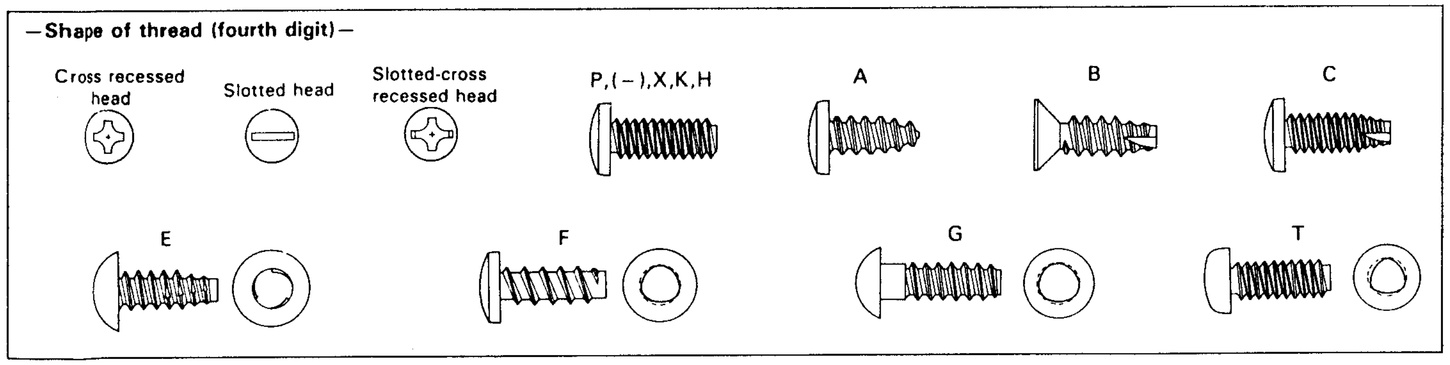

—Shape of screw head (second digit)—
B
D
H
P
R
S
T
W
X
Length

Material (third digit)

S	Steel
E	Stainless steel
C	Cast iron
U	Copper
B	Brass
P	Phosphor bronze
N	Nickel silver
Y	Cast brass
A	Aluminum
Z	Zinc alloy
K	Polycarbonate

Shape of thread (fourth digit)

P	Cross recessed head screws
(−)	Slotted head machine screws
X	Slotted-cross recessed head machine screws
K	Cross recessed head machine screws for precision equipment (type 1)
H	″ (type 3)
A	Cross recessed head tapping screws (type 1)
B	″ (type 2)
C	″ (type 3)
E	Cross recessed head special tapping screws (brand : evertight)
F	″ (brand : P-tight)
T	″ (brand : taptight)
G	″


—Shape of thread (fourth digit)—
Cross recessed head
Slotted head
Slotted-cross recessed head
P,(−),X,K,H
A
B
C
E
F
G
T

Nominal diameter (fifth and sixth digits)

The fifth and sixth digits indicate a nominal diameter or dimension. If the dimension exceeds 10 mm, three digits are used. The number indicates a nominal diameter or dimension, given in millimeters, multiplied by ten.

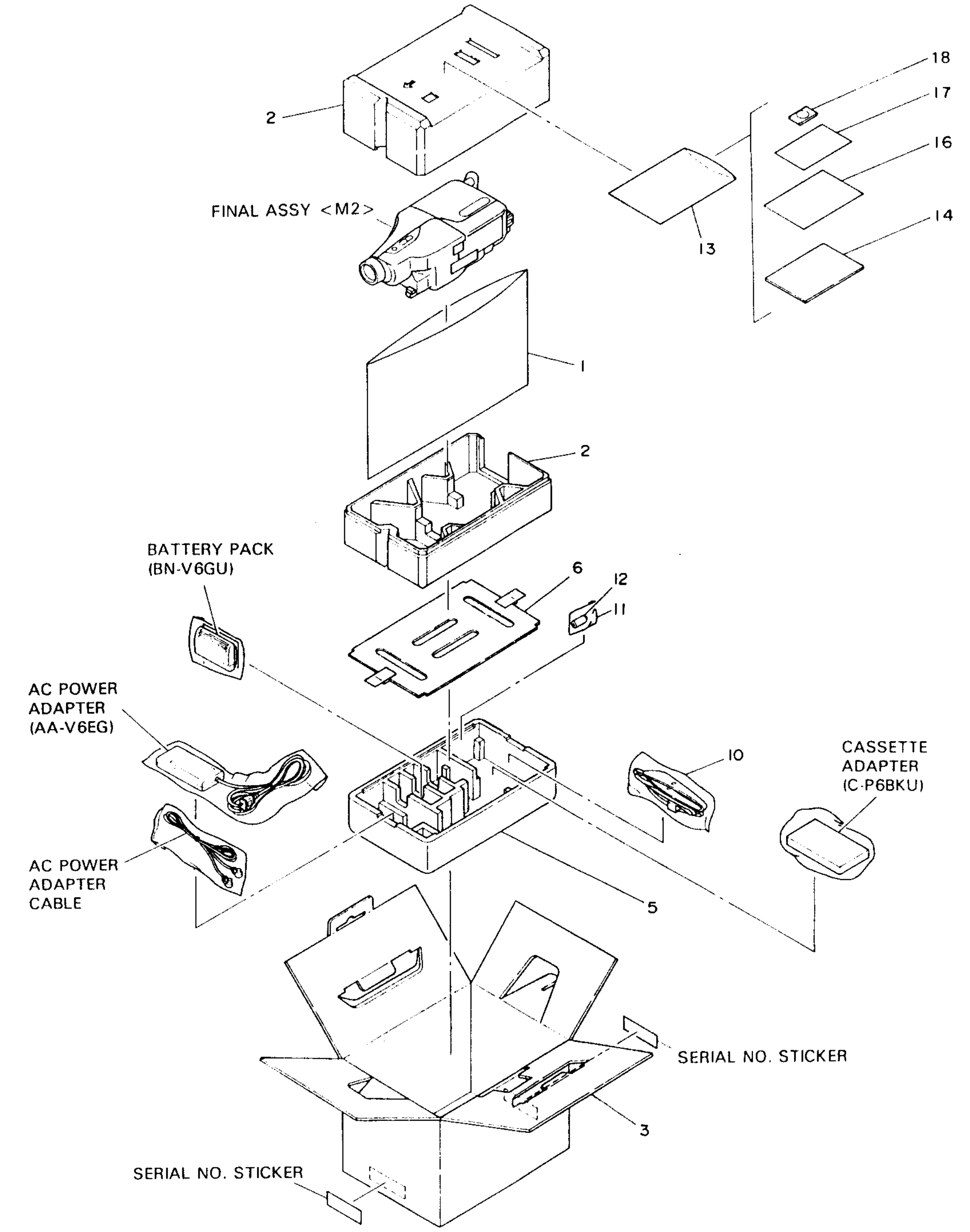
Length (seventh and eighth digits)

The seventh and eighth digits indicate length in millimeters. The preceding figure is zero when the dimension is smaller than 10 mm. For machine screws used in precision equipment whose length is given in units of 0.1 mm, the number indicates ten times the size of their length.

Surface treatment (ninth digit)

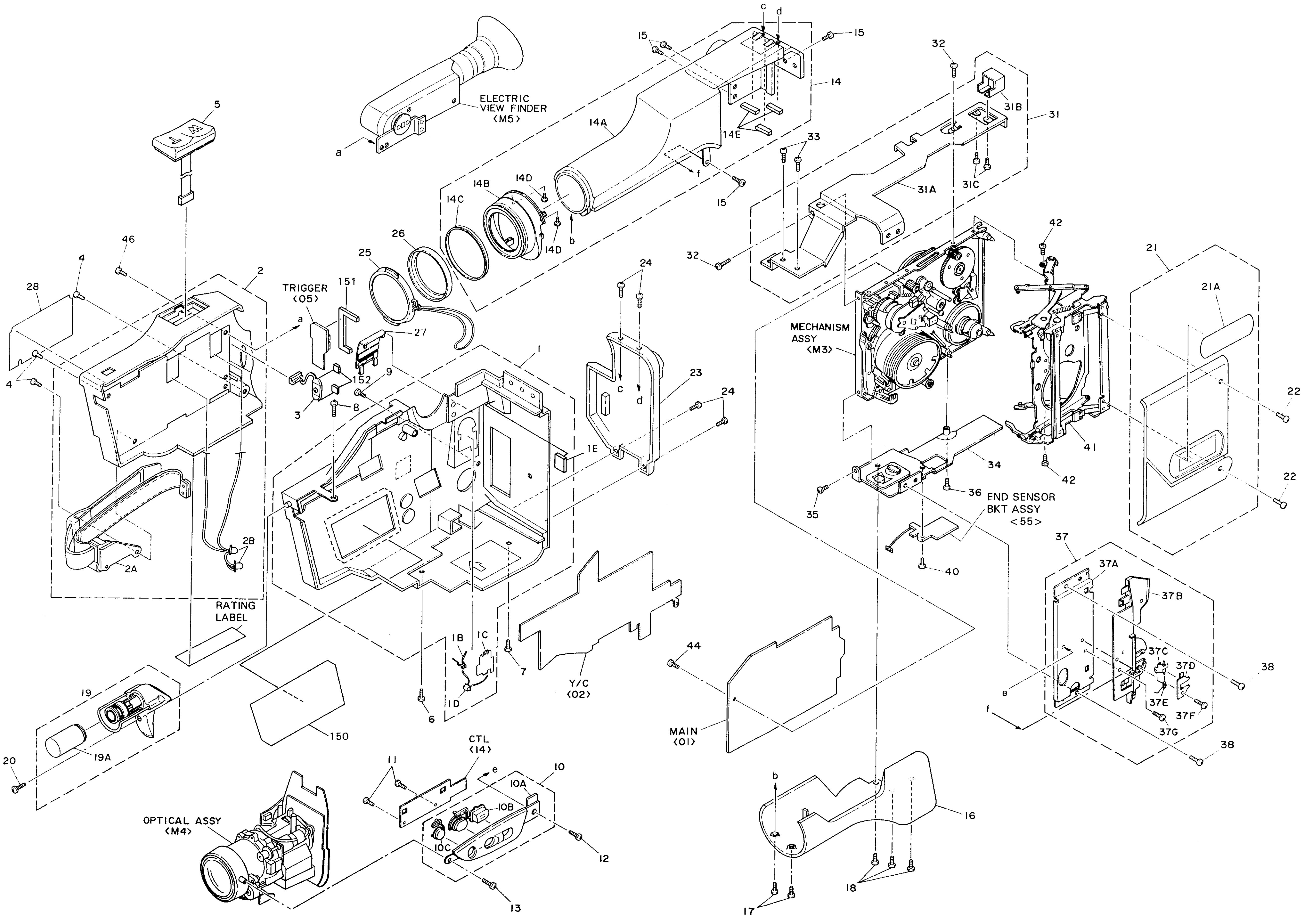
Z	Dichromate treatment after galvanizing (MFZn II-C)
N	Nickel plating (MFNiII, MFNiI)
R	Chromium plating (MBCrII, MBCrI)
G	Silver plating (SP4)
B	Black coating after plating
F	Blackening of iron (FB)
M	Blackening after galvanizing
K	Pickling of brass (PF2)
P	Phosphate treatment
W	Uni-chrome plating
L	Coated with transparent paint
A	Colored red after galvanizing (MFZnII-C)
C	Colored blue after galvanizing (MFZzII-C)
T	Colored green after galvanizing (MFZnII-C)
V	Colored purple after galvanizing (MFZnII-C)

6.2 PACKING ASSEMBLY (FOR EG) <M1>


2
FINAL ASSY <M2>
18
17
16
14
13
1
2
BATTERY PACK (BN-V6GU)
6
12
11
AC POWER ADAPTER (AA-V6EG)
10
CASSETTE ADAPTER (C-P6BKU)
AC POWER ADAPTER CABLE
5
SERIAL NO. STICKER
3
SERIAL NO. STICKER

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION
			PACKING ASSEMBLY (FOR EG) <M1>
	1	YQ30021-13	POLY BAG
	2	YU30340A-1	CUSHION ASSY
	3	YQ30568-5	PACKING CASE
	5	YQ20261	ACCESSORY TRAY
	6	YQ41377	ACCESSORY TRAY SHEET
	10	YQ10051A-3	SHOULDER STRAP
	11	QPGA005-01005	POLY BAG
	12	UM-3DJ	BATTERY
	13	QPEA-025-03505	POLY BAG
⚠	14	YU30052-104	INSTRUCTIONS
	15	—	DBP INF SHEET
		BT-20095	WARRANTY CARD
	17	TCN-3379	TAPE CATALOGUE
⚠	18	YU40547	BATTERY

6.3 FINAL ASSEMBLY <M2>

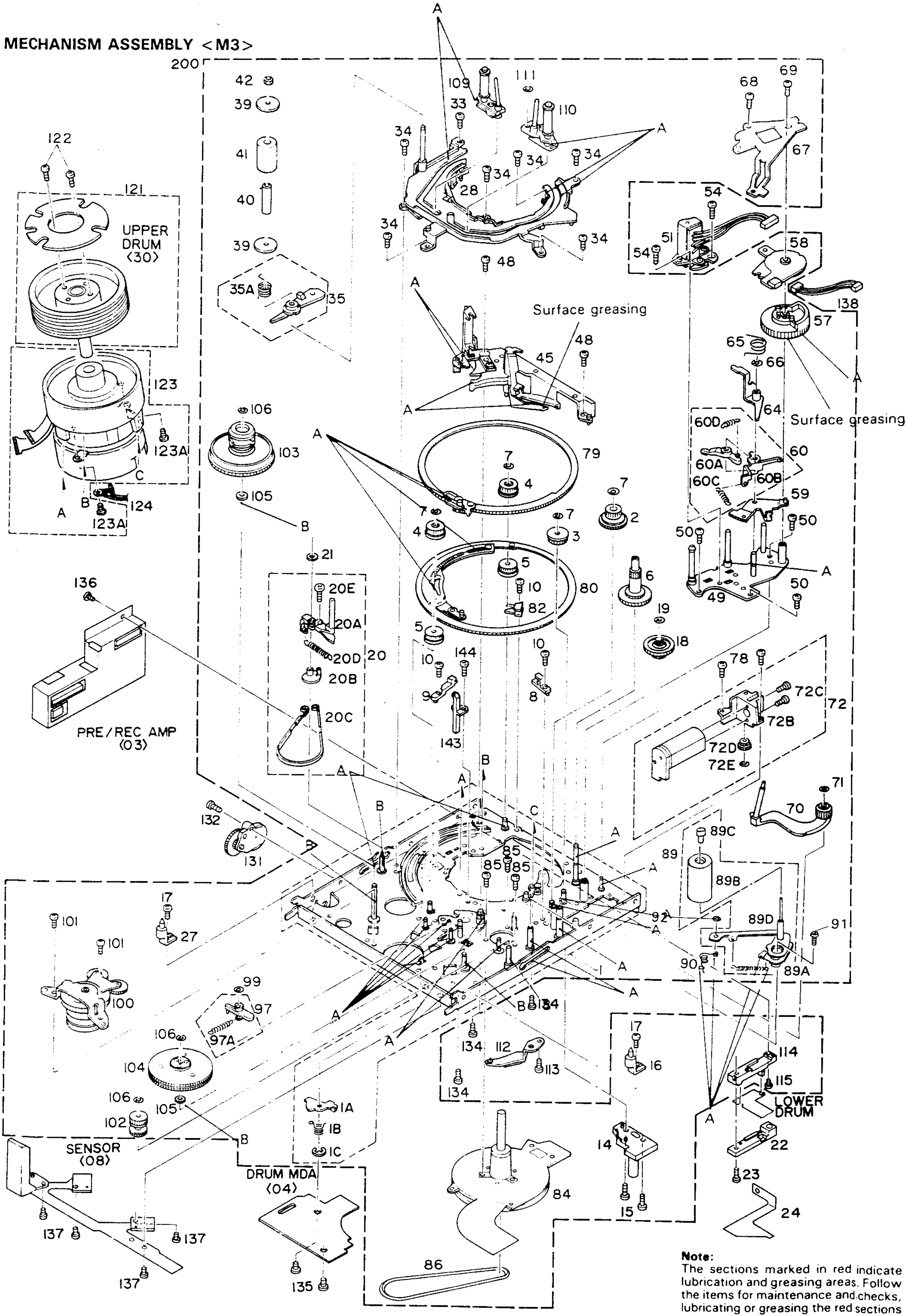

c
d
15
15
15
14
32
31B
31
ELECTRIC
VIEW FINDER
<M5>
a
14A
14E
33
31A
31C
f
5
14B
14D
14C
14D
b
15
42
26
25
24
32
21
46
4
28
2
TRIGGER
<05>
151
21A
a
27
MECHANISM
ASSY
<M3>
1
4
152
9
23
24
3
8
c
d
22
1E
34
41
42
22
36
35
END SENSOR
BKT ASSY
<55>
37
2B
2A
40
37A
37B
RATING
LABEL
1B
1C
7
37C
37D
44
38
6
1D
Y/C
<02>
e
37E
37F
37G
19
f
150
MAIN
<01>
38
20
19A
CTL
<14>
11
e
10
10A
10B
b
16
OPTICAL ASSY
<M4>
10C
12
13
18
17

* * *

FINAL ASSEMBLY <M2>

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION
⚠	1	YQ10146D-5	MAIN CASE ASSY
	1B	YQ41345-1-3	TERMINAL1(CLOCK)
	1C	YQ41346	TERMINAL2(CLOCK)
	1D	ML-Y00308A	BACK UP BATTERY WIRE ASSY
	1E	YQM30029-30	SPACER
⚠	2	YQ10147D-7	BATTERY CASE ASSY
	2A	YQ20246B-6	GRIP BELT ASSY
	2B	ML-Y00304A	B/T WIRE ASSY
	3	YQ30524	TRIGGER BUTTON
	4	YQM30032-4-2	SPECIAL SCREW,X3 M2X6
	5	YU41194-1-2	ZOOM SWITCH
	6	YQM30032-16-2	SPECIAL SCREW,M2X8
	7	YQM30032-3-2	SPECIAL SCREW,M2X5
	8	YQM30032-3-2	SPECIAL SCREW,M2X5
	9	YQM30032-2-2	SPECIAL SCREW,M2X5
	10	YQ20247B-6	BUTTON ASSY
	10A	YQ20230-2-9	ESCUTCHEON
	10B	YQ30526-1-4	DISPLAY BUTTON
	10C	YQ41286-1-4	FOCUS LOCK BUTTON
	11	YQM30032-4-2	SPECIAL SCREW,X2 M2X6
	12	YQM30032-3-2	SPECIAL SCREW,M2X5
	13	YQM30032-2-2	SPECIAL SCREW,M2X5
⚠	14	YQ10150D-9	TOP COVER ASSY
⚠	14A	YQ10139-4-10	TOP COVER
⚠	14B	YQ20235-3-12	FRONT PANEL
	14C	YQ41436	FRONT PANEL RING
	14D	YQM30032-4-2	SPECIAL SCREW,X2 M2X6
	14E	YQM30029-27	SPACER,X3
	15	YQM30032-3-2	SPECIAL SCREW,X4 M2X5
⚠	16	YQ10140-1-8	PAD
	17	YQM30032-2-2	SPECIAL SCREW,X2 M2X5
	18	YQM30032-16-2	SPECIAL SCREW,X3 M2X8
	19	YU41211	MICROPHONE
	19A	YU41211-001	WIND SCREEN
	20	YQM30032-2-2	SPECIAL SCREW, M2X5
	21	YQ20248D-8	CASSETTE COVER ASSY
	21A	YQ30521-3	CASSETTE WINDOW
	22	YQM30032-1-2	SPECIAL SCREW,X2 M2X4
	23	YQ20245-4-14	OPERATION UNIT
	24	YQM30032-2-2	SPECIAL SCREW,X4 M2X5
	25	YQ40822A	HOOD CAP ASSY
	26	YQ30567-2	HOOD
⚠	27	YQ30531-1-8	BATTERY COVER
⚠	28	YU20099-2	BATTERY BASE SHEET
	31	YQ30534A-2	FRAME BRACKET ASSY
	31A	YQ20234-1-6	FRAME BRACKET
	31B	YQ41364-1-3	HOOK(SHOULDER)
	31C	YQM30032-1-2	SPECIAL SCREW,X2 M2X4
	32	SPSH1725M	SCREW,X2
	33	YQM30032-2-2	SPECIAL SCREW,X2 M2X5
	34	YQ30528A	BASE BRACKET ASSY
	35	SPSH1725M	SCREW
	36	SPSK1780M	MINI SCREW
	37	YQ20249A-2	DRUM GUARD ASSY
	37A	YQ30510-1-2	REINFORCEMANT
	37B	YQ10145-1-3	DRUM GUARD
	37C	YQ30109-1-1	TAPE GUIDE
	37D	YQ30110	TAPE GUIDE HOLDER
	37E	YQ40451	TORSION SPRING
	37F	SSSG1740M	SCREW
	37G	YQM30032-1-2	SPECIAL SCREW,M2X4
	38	YQM30032-1-2	SPECIAL SCREW,X2 M2X4
	40	SPSH1725M	SCREW
	41	YQ20237A	CASSETTE HOUSING ASSY
	42	SPSK1730M	SCREW,X2
	44	YQM30032-2-2	SPECIAL SCREW,M2X5
	46	YQM30032-34	SPECIAL SCREW, M2X16
	150	YQ41456	SHIELD
	151	YQ41448	SPACER
	152	YQM30029-28	SPACER,X2

6.4 MECHANISM ASSEMBLY <M3>


200
A
122
121
UPPER DRUM <30>
123
123A
C
A
B
124
123A
42
39
41
40
39
35A
35
109
33
111
110
34
34
34
34
28
34
34
34
48
A
68
69
67
54
51
54
58
138
57
A
45
48
Surface greasing
A
65
66
64
Surface greasing
A
106
103
105
B
79
7
4
7
7
4
7
3
2
5
10
82
80
6
19
18
60D
60A
60C
60
60B
59
50
50
A
50
49
136
21
20E
20A
20D
20
20B
20C
PRE/REC AMP <03>
5
10
144
10
9
8
143
78
72C
72
72B
72D
72E
B
A
71
70
A
B
C
132
131
85
85
85
A
89C
89
89B
A
17
101
101
27
100
99
97
97A
106
104
106
105
102
B
SENSOR <08>
92
A
89D
91
90
89A
A
A
B
134
A
A
134
112
113
134
1A
1B
1C
DRUM MDA <04>
17
16
114
115
LOWER DRUM
A
14
22
23
84
15
24
137
137
137
135
86

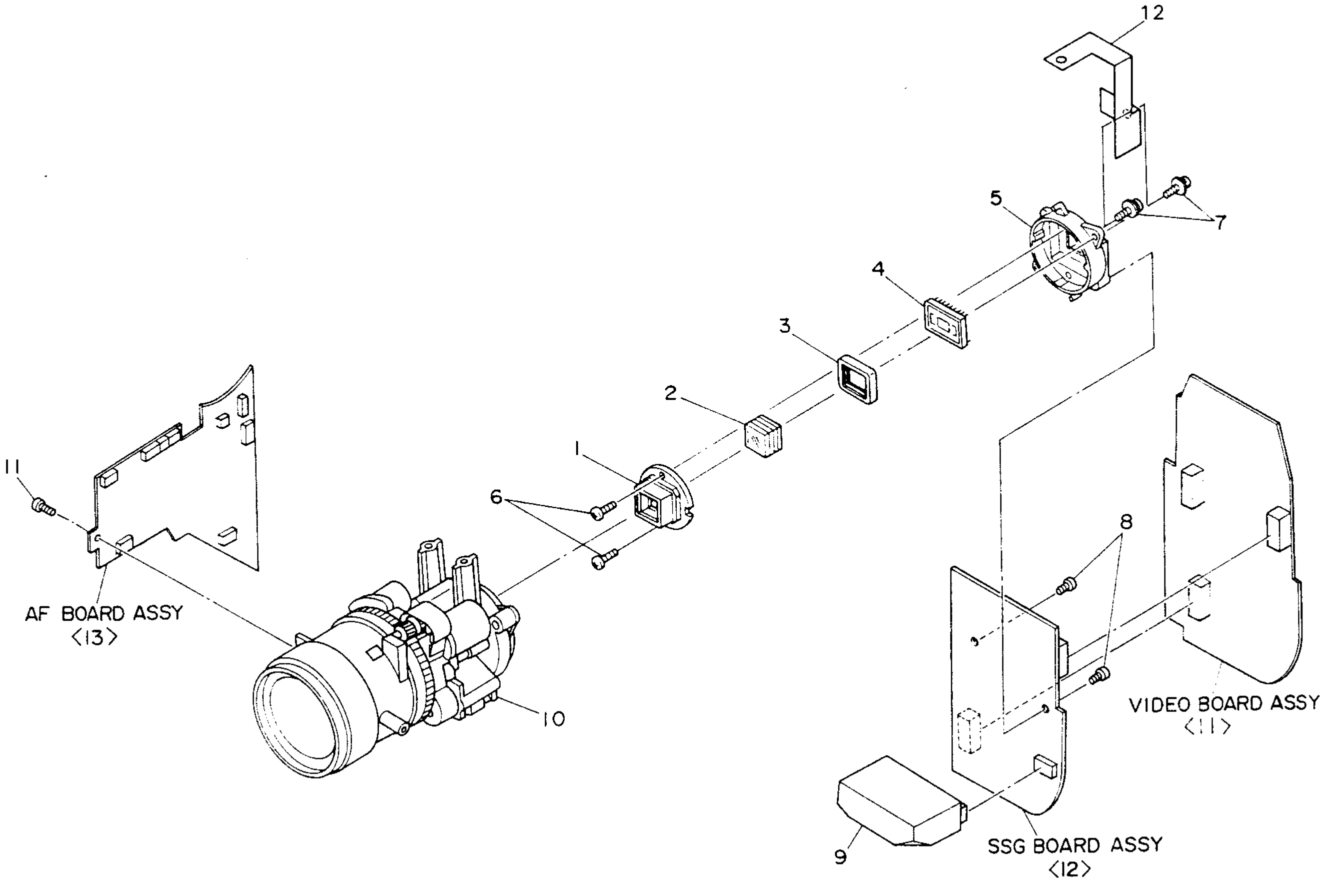
Note:
The sections marked in red indicate lubrication and greasing areas. Follow the items for maintenance and checks, lubricating or greasing the red sections when necessary.

* *

MECHANISM ASSEMBLY <M3>

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION
	1	YQ10095B-12	MAIN DECK ASSY
	1A	YQ40737-1-2	EJECT LEVER
	1B	YQ40739-1-3	TORSION SPRING
	1C	PQM30017-10	SLIT WASHER
	2	YQ40744	LOADING GEAR 1
	3	YQ40123	LOADING GEAR 2
	4	YQ40124	RING GUIDE GEAR(S),X2
	5	YQ40125-2	RING GUIDE GEAR(T),X2
	6	YQ30271	TERMINAL GEAR
	7	PQM30017-27	SLIT WASHER,X4
	8	YQ40746-1-1	RING GUIDE 1
	9	YQ40128-1-1	RING GUIDE 3
	10	SPSH1725M	SCREW,X3
	14	YQ30515-1-2	LOADING GUIDE
	15	SPSH1740M	MINI SCREW,X2
	16	YQ41441	GUIDE PIN
	17	SPSH1725M	SCREW,X2
	18	YQ40750	MIDDLE GEAR
	19	PQM30017-27	SLIT WASHER
	20	YQ41318A-1	TENSION SERVO ASSY
	20A	YQ41319A	TENSION ARM 1 ASSY
	20B	YQ30516-1-2	TENSION ARM 2
	20C	YQ41320A-1	TENSION BAND ASSY
	20D	YQ41314-1-1	TENSION SPRING
	20E	YQM30032-33	SPECIAL SCREW, M2X10
	21	PQM30017-27	SLIT WASHER
	22	YQ41307	FPC HOLDER U
	23	SPSH1780M	SCREW
	24	YDM4059	SHIELD
	27	YQ41324	GUIDE PIN
	28	YQ41312A	GUIDE RAIL ASSY
	33	SPSH1740M	SCREW
	34	SPSH1725M	SCREW,X6
	35	YQ41313A	FE HEAD ARM ASSY
	35A	YQ40391-1-2	TORSION SPRING
	39	YQ41315	FLANGE,X2
	40	YQ41378	COLLAR
	41	YQ41121	IMPEDANCE ROLLER
	42	NTS2000N	NUT
	45	YQ40762A-4	UV BASE ASSY
	48	SPSH1730M	MINI SCREW,X2
	49	YQ40763B-7	SUB DECK ASSY
	50	SPSH1725M	SCREW,X3
	51	YQ41311A-1	AUDIO/CONTROL HEAD ASSY
	54	YQ40904A-1	ALOCK SCREW,X2
	57	YQ20057-1-3	CAM GEAR
	58	YU41080	CAM ENCODER
	59	YQ40769A-5	ARM GEAR ASSY
	60	YQ40812A	LOCK ARM ASSY
	60A	YQ40358	LOCK ARM 1
	60B	YQ40771	LOCK ARM 2
	60C	YQ40342	TENSION SPRING
	60D	YQ40362	TENSION SPRING
	64	YQ40772A-1	LOCK ARM 3 ASSY
	65	YQ41113	TORSION SPRING
	66	PQM30017-25	SLIT WASHER
	67	YQ30266-2	MIDDLE POLE STOPPER
	68	SPSH1725M	SCREW
	69	SPSH1780M	SCREW
	70	YQ40774A-1	MIDDLE POLE ASSY
	71	PQM30017-23	SLIT WASHER
⚠	72	YU41177V	MODE CONTROL MOTOR ASSY
	72B	YQ40777A-4	MODE CONTROL BRACKET ASSY
	72C	SPSH1425M	SCREW,X2
	72D	YQ40778	WORM WHEEL
	72E	PQM30017-27	WASHER
	78	SPSH1730M	MINI SCREW,X2
	79	YQ40779B	SUPPLY LOADING RING ASSY
	80	YQ40781B	TU LOADING RING ASSY
	82	YQ40784	RING GUIDE 2
⚠	84	YU41176V	CAPSTAN MOTOR ASSY
	85	SPSH1730M	MINI SCREW,X3
	86	YQM30003-3	BELT
	89	YQ40785D	PINCH ROLLER ARM ASSY
	89A	YQ40793	TORSION SPRING
	89B	YQ40373A	PINCH ROLLER ASSY
	89C	YQ40401	PINCH ROLLER CAP
	89D	YQ40786C	ARM ASSY
	90	YQ40794-1-1	TORSION SPRING
	91	PQ41535-4	SCREW
	92	PQM30017-27	SLIT WASHER
	97	YQ41334A	SEARCH BRAKE LEVER ASSY
	97A	YQ40798-1-1	TORSION SPRING
	99	PQM30017-27	SLIT WASHER
	100	YU41178	CENTER PULLEY BRACKET ASSY
	101	SPSH1725M	SCREW,X2
	102	YQ40147-1-1	TU GEAR
	103	YU41179	SUPPLY REEL DISK ASSY
	104	YU40624-1-1	TU CLUTCH ASSY
	105	Q03093-835	WASHER,X2
	106	PQM30017-27	SLIT WASHER,X3
	109	YU41174	SUPPLY POLE BASE ASSY
	110	YU41175	TAKE UP POLE BASE ASSY
	111	PQM30017-27	SLIT WASHER
	112	YU41208	BRUSH
	113	SPSH1730M	MINI SCREW
	114	YQ30514-1-2	FPC HOLDER L
	115	SPSH1740M	MINI SCREW
	121	YDM2018B	UPPER DRUM ASSY
	122	YDM4031	SCREW,X2
	123	YDM2020F	LOWER DRUM MOTOR ASSY
	123A	SPSK1725M	SCREW,X2
	124	YU41074	DEW SENSOR
	131	YU40788	DAMPER
	132	SPSH1760M	SCREW
	134	SPSH1730M	MINI SCREW,X3
	135	PQ41450-2	SCREW,X2
	136	SPSH1720M	MINI SCREW
	137	SPSH1730M	MINI SCREW,X4
	138	ML-Y00278B	CAM SW WIRE ASSY
	143	YQ40831-1-2	LED GUIDE
	144	SPSH1725M	SCREW
	200	YS20288A	MECHA ASSY (B)

6.5 OPTICAL BLOCK ASSEMBLY <M4>

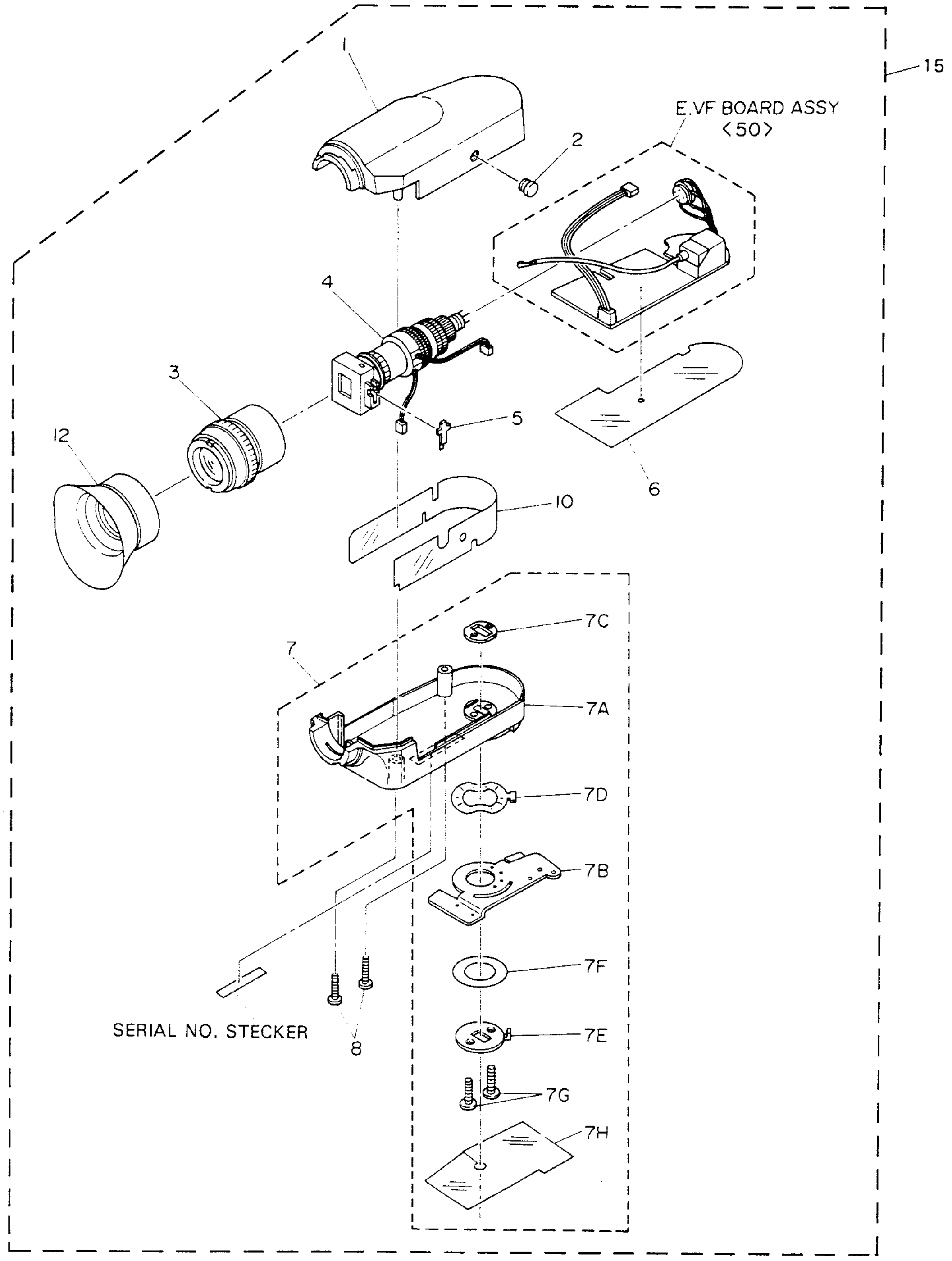

12
7
5
4
3
2
1
6
11
AF BOARD ASSY
<13>
10
8
VIDEO BOARD ASSY
<11>
9
SSG BOARD ASSY
<12>

* *

OPTICAL BLOCK ASSEMBLY <M4>

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION
	1	YQ30518	OPTICAL LPF HOLDER
	2	YU41184	OPTICAL LPF
	3	PQ42339	SPACER RUBBER
⚠	4	TCD236C	IC(CCD)
	5	YQ30519	IMAGER HOLDER
	6	SPSK2004F	MINI SCREW,X2
	7	DPSP2008Z	SCREW,X2
	8	SPSP2004Z	SCREW,X2
	9	YU41217	DC-DC CONVERTER
⚠	10	YU41182	OPTICAL BLOCK ASSY
	11	YQM30032-2-2	SPECIAL SCREW, M2X5
	12	YQ30596	BRACKET

6.6 ELECTRICAL VIEWFINDER ASSEMBLY <M5>

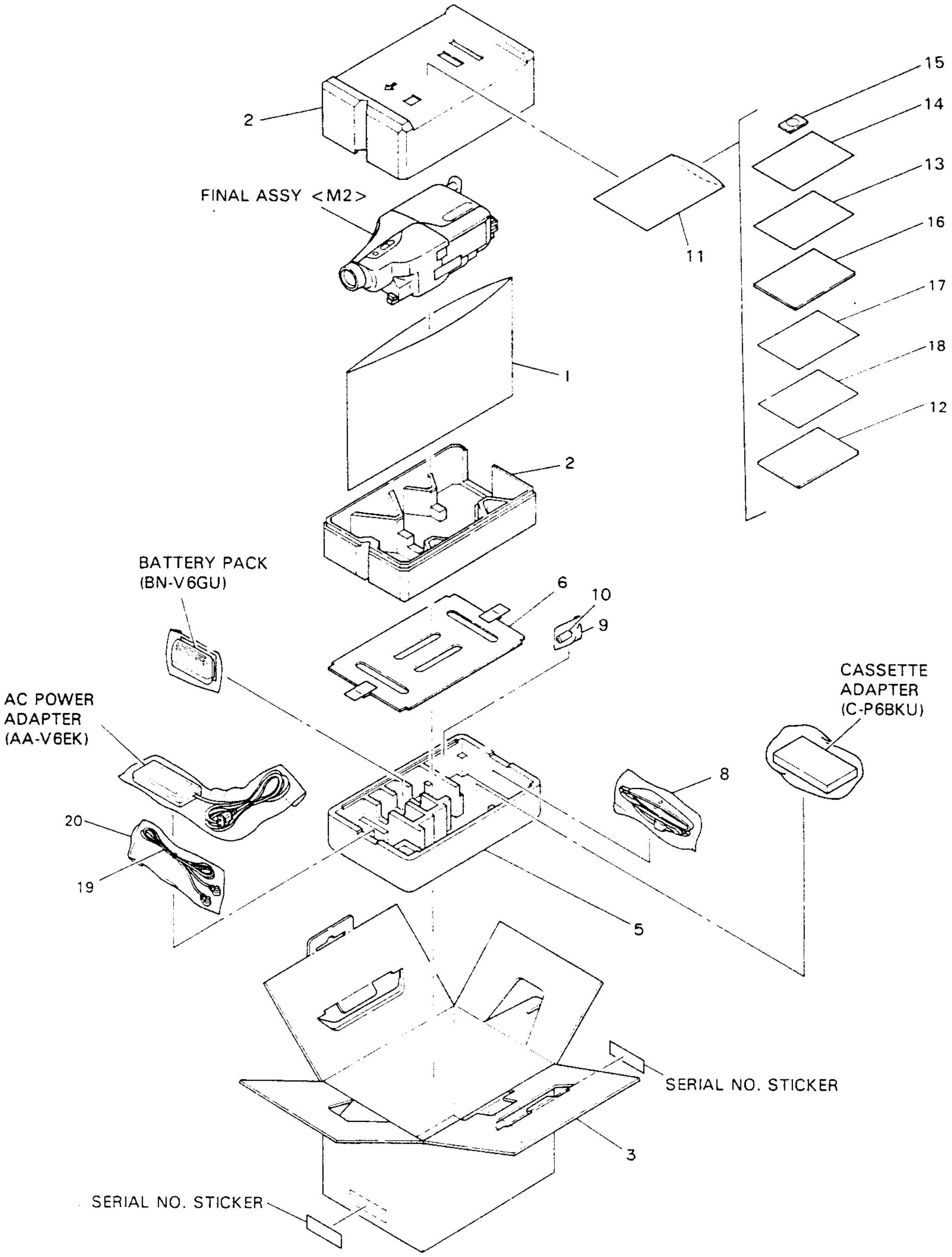

1
2
15
E.VF BOARD ASSY
<50>
4
3
12
5
6
10
7
7C
7A
7D
7B
7F
7E
7G
7H
SERIAL NO. STECKER
8

* * *

ELECTRICAL VIEWFINDER ASSEMBLY <M5>

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION
	1	YU30315-001	TOP CASE
	2	YU30045-024	CAP
	3	YU30315-004	LENS CASE ASSY
⚠	4	YU30315-007	CRT ASSY
	5	YU30181-014	HIGHT VOLTAGE COVER
	6	YU30315-009	INSULATOR A
	7	YU30315-010	BOTTOM CASE ASSY
	7A	YU30315-012	BOTTOM CASE
	7B	YU30315-014	MOUNTING PLATE
	7C	YU30315-015	PLATE NAT
	7D	YU30315-016	WAVE WASHER
	7E	YU30315-017	TILT COVER
	7F	YU30315-018	SPACER
	7G	YU30315-019	SCREW,X2 M2X9.5
	7H	YQ41445	SHIELD
	8	YU30315-020	SCREW,X2 M1.7X16
	10	YU30315-022	INSULATOR B
	12	YU30315-006	EYE CAP
⚠	15	YU30315D-5	E. VF ASSY

6.7 PACKING ASSEMBLY (FOR EK) <M8>


2
FINAL ASSY <M2>
15
14
13
16
17
18
12
11
1
2
BATTERY PACK
(BN-V6GU)
6
10
9
CASSETTE
ADAPTER
(C-P6BKU)
AC POWER
ADAPTER
(AA-V6EK)
8
20
19
5
SERIAL NO. STICKER
3
SERIAL NO. STICKER

PACKING ASSEMBLY (FOR EK) <M8>

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION
	1	YQM30021-13	POLY BAG
	2	YU30340A-1	CUSHION ASSY
	3	YQ30568-6	PACKING CASE
	5	YQ20261	ACCESSORY TRAY
	6	YQ41377	ACCESSORY TRAY SHEET
	8	YQ10051A-3	SHOULDER STRAP
	9	QPGA005-01005	POLY BAG
	10	UM-3DJ	BATTERY
	11	PQM30032-5	POLY BAG
	12	YU30052-105	INSTRUCTIONS
	13	YU40406-18	MARCKET SHEET
	14	TCN-3379	TAPE CATALOGUE
⚠	15	YU40547	BATTERY
	16	YU30328	M. CLUP GUIDE
	17	BT-20066A	E. DISTRI. LIST
	18	BT-20060	GUARANTEE CARD
	19	YU40412	DC PLUG CORD
	20	QPGA024-00703	POLY BAG

SECTION 7
PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS:

RESISTORS—All resistance values are in ohms (Ω), unless otherwise indicated.

k : 1,000 (Kilo)
M : 1,000,000 (Mega)
Chip R : Chip Resistor
Chip VR : Chip Variable Resistor
Comp. R : Composition Resistor
CR : Carbon Film Resistor
FR : Fusible Resistor
MFR : Metal Film Resistor
MPR : Metal Plate Resistor
OMR : Oxide Metal Film Resistor
PMR : Precision Metal Film Resistor
UFR : Unflammable Resistor
VR : Variable Resistor (Potentiometer)
WR : Wire Wound Resistor

CAPACITORS—All capacitance values are in μF, unless otherwise indicated.

pF : μμF (Pico farad)
C Cap : Ceramic Capacitor
Chip Cap : Chip Capacitor
Chip T Cap: Chip Tantalum Capacitor
E Cap : Electrolytic Capacitor
FM Cap : Film Mica Capacitor
LL Cap : Low Leak Current Electrolytic Capacitor
MM Cap : Metalized Mylar Capacitor
MP Cap : Metalized Paper Capacitor
MY Cap : Mylar Capacitor
NP Cap : Non-polar Capacitor
PC Cap : Polycarbonate Capacitor
PP Cap : Polypropylene Capacitor
PS Cap : Polystyrol Capacitor
T Cap : Tantalum Capacitor
TF Cap : Thin Film Capacitor
TR Cap : Trimmer Capacitor

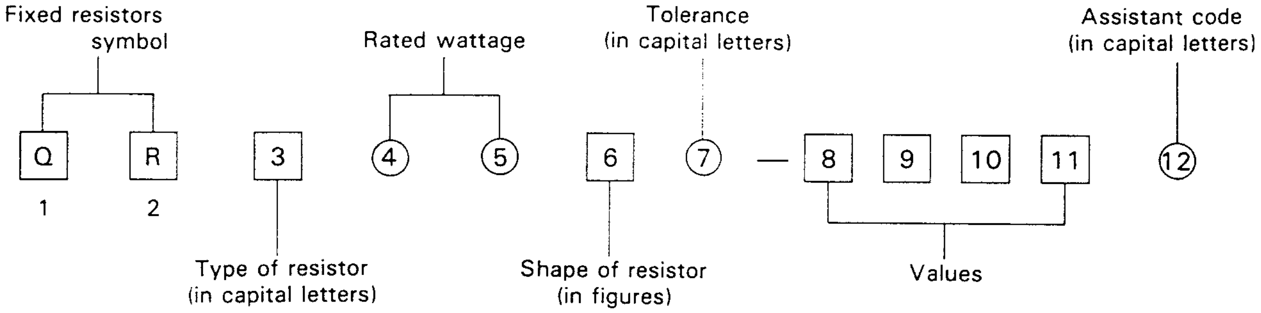
NOTES:

- [M] indicates mechanical symbol number.
- [2 digits] indicates circuit board symbol number.
- ''X '' indicates quantity per set.

7.1 STANDARD PART NUMBER CODING

7.1.1 Fixed resistor coding

Fixed resistor part numbers are as follows.


Fixed resistors symbol
Rated wattage
Tolerance (in capital letters)
Assistant code (in capital letters)
Q
R
3
④
⑤
6
⑦
—
8
9
10
11
⑫
1
2
Type of resistor (in capital letters)
Shape of resistor (in figures)
Values

Type of resistor (third digit)

C	Composition resistors
D	Carbon film resistors
F	Unflammable resistors
G	Oxide metal film resistors
H	Fusible resistors
M	Metal plate resistors
S	Metal glazed resistors
V	Precision metal film resistors
W	Wire wound resistors
X	Metal film resistors
Z	Special resistors

Rated wattage (fourth and fifth digits)

A0	1/10 W
18	1/8 W
16	1/6 W
14	1/4 W
12	1/2 W
01	1 W
02	2 W
03	3 W
04	4 W
05	5 W
06	6 W
07	7 W
75	7.5 W
08	8 W
10	10 W
15	15 W
A6	16 W
20	20 W
30	30 W

Tolerance (seventh digit)

F	±1 %
G	±2 %
J	±5 %
K	±10 %
M	±20 %

Assistant code (twelfth digit)

A	Small type
B	Small type
S	Small type
Y	Lead tapping
Z	Lead tapping

Values (eighth — tenth or eleventh digits)

examples:

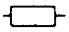
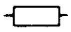
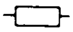
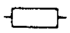
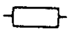
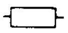
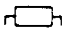
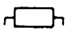
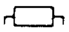
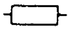
R47		0.47 Ω
4R7		4.7 Ω
470	47×10^0	47 Ω
471	47×10^1	470 Ω
472	47×10^2	4.7 kΩ
473	47×10^3	47 kΩ
474	47×10^4	470 kΩ
475	47×10^5	4.7 MΩ

QRV resistance shown by four digits:

4640	464×10^0	464 Ω
4641	464×10^1	4.64 kΩ
4642	464×10^2	46.4 kΩ

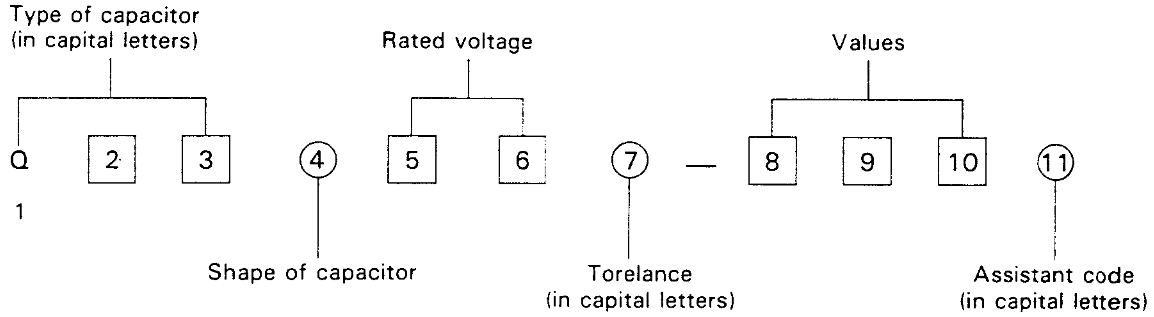
Shape of resistor (sixth digit)

Note: ■ indicates flame retardant resistor.

Shape of resistor \ Type of resistor	C	D	F	G	H	M	S	V	W	X
1										
2										
3										
4										
5									(L) type	
6										
7			Lug (B) type							
8			Lug (A) type				 Chip			
9			Lug (C) type							

7.1.2 Fixed capacitor coding

Fixed capacitor part numbers are as follows.


Type of capacitor
(in capital letters)
Rated voltage
Values
Q
1
2
3
4
5
6
7
—
8
9
10
11
Shape of capacitor
Torelance
(in capital letters)
Assistant code
(in capital letters)

Ceramic capacitors

Type of capacitor (first — third digits)		Shape of capacitor (fourth digit)				
Symbol	Characteristics	Mono-direction	Kink lead	Axial lead	Axial forming lead	Chip
QCC	Ceramic	1		4	5	
QCD	High capacitance					A
QCF	High capacitance	1,4	3			8,A
QCS	Temperature compensation	1	3	4	5	8,A
QCT	Temperature compensation	Special coding				8,A
QCV	Ceramic			1	3	
QCX	Ceramic			1	3	
QCY	High capacitance	1,4	3	6	7	8,A
QCZ	Special type	Special coding				
QCB	Ceramic			B	C	

Electrolytic capacitors

Type of capacitor (first — third digits)		Shape of capacitor (fourth digit)				
Symbol	Characteristics	Tubular	Mono-direction	Anti-stress	Forming	Snap-in
QEB	Low leakage		4	5	6	
QEC	Low leakage		4,8,A	9,B	6,C	
QEE	Tantalum (normal)		4	5	6	
	Tantalum (small)		8			
QEF	Chip tantalum	8 (chip type)				
QEG	Low impedance		4			
QEK	Miniature type		4	5	6	
QEL	Small type		4	5	6	7
QEM	Small type		4,A	5	6	
QEN	Non-polar	2	4	5	6	
QEP	Non-polar (small)		4,A	5,B	6,C	
QER	Miniature type		4	5	6	
QET	Small type	2	4,A	5,B	6,C	7
QEU	Small type		4	5	6	
QEV	Small type		4		6	7
QEW	Normal	2	4	5	6	7

Paper film capacitors

Type of capacitor (first — third digits)		Shape of capacitor (fourth digit)				
		Tubular	Normal		Flame retardant	
Symbol	Characteristics		Mono-direction	Kink lead	Mono-direction	Kink lead
QFA	Metalized polypropylene				7	
QFE	Metalized mylar				5	
QFF	Film mica		4			
QFG	Polypropylene film		4	8		
QFH	Metalized mylar	2	4	3	5,7	6
QFJ	Mylar (special)		4			
QFK	Metalized mylar (small)				5	
QFM	Mylar	2	4	3,7	5	6
QFN	Mylar (small)		4	3		
QFP	Polypropylene		4	3,8		
QFS	Polystyrole	2	4	3		
QFV	Thin film		4	8		
QFZ	Special type	Special coding				

Rated voltage (fifth and sixth digits)

Sixth digit / Fifth digit	A	B	C	D	E	F	G	H	J	K	V	W	X
0						3.15	4.0		6.3				
1	10		16	20	25		40	50	63	80	35		
2	100	125	160	200	250	315	400	500	630		350	450	600
3	1000	1250		2000				5000					

Tolerance (seventh digit)

A	$^{+100}_{-10}$ %	M	± 20 %
F	± 1 %	N	± 30 %
G	± 2 %	P	$^{+100}_{-0}$ %
H	$^{+50}_{-10}$ %	R	$^{+30}_{-10}$ %
J	± 5 %	X	$^{+40}_{-20}$ %
K	± 10 %	Z	$^{+80}_{-20}$ %

Values (eighth — tenth digits)

Example : Values are in picofarads

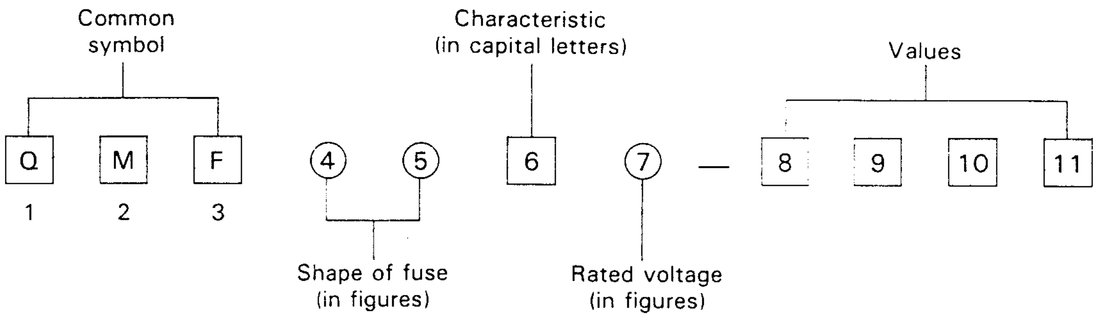
101 .... 10×10^1 pF .... 100 pF
102 .... 10×10^2 pF .... 1,000 pF (0.001 μF)
103 .... 10×10^3 pF .... 10,000 pF (0.01 μF)
104 .... 10×10^4 pF .... 100,000 pF (0.1 μF)
105 .... 10×10^5 pF .... 1 μF
5R0 .... 5.0 pF

Assistant code (eleventh digit)

G	Small size
Z	Lead tapping
Y	Lead tapping

7.1.3 Fuse coding

Standard fuse part numbers are as follows.


Common symbol
Characteristic (in capital letters)
Values
Q
M
F
④
⑤
6
⑦
—
8
9
10
11
1
2
3
Shape of fuse (in figures)
Rated voltage (in figures)

Shape of fuse
(fourth and fifth digits)

51	ϕ5.2 × 20 mm
60	ϕ6.4 × 30 mm
61	ϕ6.35 × 31.8 mm
63	ϕ6.4 × 30 mm with lead wires
66	ϕ6.35 × 31.8 mm with lead wires
00	Special type

Rated voltage
(seventh digit)

1	AC125 V
2	AC250 V
3	0.1 – 1 A : AC250 V 1.25 – 6.3 A : AC125 V

Values
(eighth-tenth or eleventh digits)
example:

R63	.... 0.63 A
1R0	.... 1.0 A
2R5	.... 2.5 A
100	.... 10 A
R315	.... 0.315 A
1R25	.... 1.25 A

Characteristics (sixth digit)

Symbol	Fusing Current	Fusing Time	Remarks
A	210 %	Within 2 min.	Anti-rush type (for Europe)
	275 %	0.6 – 10 sec.	
	400 %	0.15 – 3 sec.	
	1000 %	0.02 – 0.3 sec.	
B	210 %	Within 30 min.	Regular fusible type (for SEMKO, Europe)
	275 %	0.05 – 2 sec.	
	400 %	0.01 – 0.3 sec.	
C	135 %	Within 1 hr.	Regular fusible type (for UL, Japan)
	200 %	Within 2 min.	
E	210 %	Within 2 min.	Anti-rush type (for Europe)
	275 %	0.6 – 10 sec.	
	400 %	0.15 – 3 sec.	
	1000 %	0.02 – 0.3 sec.	
J	135 %	Within 1 hr.	Anti-rush type
	200 %	Within 2 min.	
M	135 %	Within 1 hr.	Regular fusible type (for UL)
	200 %	Within 2 min.	
R	160 %	Within 1 hr.	Regular fusible type
	200 %	Within 2 min.	
S	160 %	Within 1 hr.	Anti-rush type
	200 %	Within 2 min.	
	700 % – 2000 %	Within 0.01 sec.	
U	135 %	Within 1 hr.	Anti-rush type (for UL)
	200 %	Within 2 min.	
	800 % – 2000 %	Within 0.01 sec.	

* *

MAIN BOARD ASSEMBLY <01>

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	PWBA	YB10045F-02	MAIN BOARD ASSY	
	TRAP101	AFZ74A002A1	IC,FT101	
	or	AFZ74A002X1	IC,FT101	
	IC1	M5236ML	IC	
	IC101	VC2508A	IC	
	IC102	LB1617M	IC	
	IC103	UPC324G2	IC	
	IC104	LM2904E	IC	
	or	BA10358F	IC	
	or	UPC358G2	IC	
	or	NJM2904E	IC	
	IC105	UPC393G2	IC	
	IC301	BA7751AF	IC	
	IC302	M5218FP	IC	
	IC401	M37412M4	IC	
	IC402	M54543ASL	IC	
	IC403	BU4584BF	IC	
	IC404	TC4S81F	IC	
	IC405	S-81252HG	IC	
	IC406	S-8054HN	IC	
	Q1	2SB1009(PQ)	TRANSISTOR	
	Q2	2SJ146	FE TRANSISTOR	
	Q3	DTC144EU	TRANSISTOR	
	Q101	DTC144EU	TRANSISTOR	
	Q102	DTC144EU	TRANSISTOR	
	Q103	DTC144EU	TRANSISTOR	
	Q104	DTC144EU	TRANSISTOR	
	Q105	2SA1577(PQR)	TRANSISTOR	
	Q106	DTC144EU	TRANSISTOR	
	Q107	2SA1576(QRS)	TRANSISTOR	
	Q108	2SC4081(QRS)	TRANSISTOR	
	Q109	DTC144EU	TRANSISTOR	
	Q110	2SA1576(QRS)	TRANSISTOR	
	Q111	2SC4081(QRS)	TRANSISTOR	
	Q113	DTC144EU	TRANSISTOR	
	Q114	2SB798(LK)	TRANSISTOR	
	Q115	DTA123YU	TRANSISTOR	
	Q116	2SB798(LK)	TRANSISTOR	
	Q117	DTA123YU	TRANSISTOR	
	Q118	DTA144EU	TRANSISTOR	
	Q301	FMW3	TRANSISTOR	
	Q302	DTA143EU	TRANSISTOR	
	Q303	2SC4081(RS)	TRANSISTOR	
	Q304	2SC4081(RS)	TRANSISTOR	
	Q305	DTA143EU	TRANSISTOR	
	Q306	DTA143EU	TRANSISTOR	
	Q307	DTA144EU	TRANSISTOR	
	Q308	2SC4081(RS)	TRANSISTOR	
	Q309	FMG1	TRANSISTOR	
	Q401	DTA114EU	TRANSISTOR	
	Q402	2SK665	FE TRANSISTOR	
	Q403	DTA114EU	TRANSISTOR	
	Q404	2SA1576(QRS)	TRANSISTOR	
	Q405	2SK665	FE TRANSISTOR	
	Q406	2SA1577(PQR)	TRANSISTOR	
	Q407	2SC4081(QRS)	TRANSISTOR	
	Q501	2SC4081(QRS)	TRANSISTOR	
	Q601	2SA1577(PQR)	TRANSISTOR	
	Q602	2SC4081(RS)	TRANSISTOR	
	Q603	2SC4081(RS)	TRANSISTOR	
	Q604	2SC4081(RS)	TRANSISTOR	
	D1	ERA81-004	DIODE	
	D2	DAN202U	DIODE	
	D3	DAN202U	DIODE	
	D101	MA141WK	DIODE	
	D102	MA141WK	DIODE	
	D103	SB05-05CP-X	DIODE	
	D104	SB05-05CP-X	DIODE	
	D401	DA204U	DIODE	
	D402	RB451F	DIODE	
	D403	IMN10	DIODE	
	D404	RD6.8MB1	ZENER DIODE	
	or	RD6.8MB2	ZENER DIODE	
	R1	QRD161J-683	RESISTOR	68kΩ,1/6W
	R2	NRSA63J-105N	RESISTOR	1MΩ,1/16W
	R3	NRSA63J-824N	RESISTOR	820kΩ,1/16W
	R4	NRSA63J-221N	RESISTOR	220Ω,1/16W
	R5	NRSA63J-123N	RESISTOR	12kΩ,1/16W
	R6	NRSA63J-822N	RESISTOR	8.2kΩ,1/16W
	R7	NVP1305-102N	V RESISTOR,REG 8V	1kΩ
	R8	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R9	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
	R11	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R12	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R101	NRSA63J-681N	RESISTOR	680Ω,1/16W
	R102	NRSA63J-474N	RESISTOR	470kΩ,1/16W
	R103	NRSA63J-331N	RESISTOR	330Ω,1/16W
	R105	NRSA63J-473N	RESISTOR	47kΩ,1/16W
	R106	NRSA63J-105N	RESISTOR	1MΩ,1/16W
	R107	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R108	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R109	NRSA63J-152N	RESISTOR	1.5kΩ,1/16W
	R110	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R111	NRSA63J-151N	RESISTOR	150Ω,1/16W
	R112	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R113	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R114	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R115	NRSA63J-332N	RESISTOR	3.3kΩ,1/16W
	R116	NRSA63J-332N	RESISTOR	3.3kΩ,1/16W
	R117	NRSA63J-332N	RESISTOR	3.3kΩ,1/16W
	R118	NRSA63J-332N	RESISTOR	3.3kΩ,1/16W

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	R119	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R120	NRSA63J-104N	RESISTOR	100kΩ,1/16W
	R121	NRSA63J-104N	RESISTOR	100kΩ,1/16W
	R122	NRSA63J-104N	RESISTOR	100kΩ,1/16W
	R123	NRVA62D-104N	RESISTOR	100kΩ,1/16W
	R126	NRSA63J-393N	RESISTOR	39kΩ,1/16W
	R127	NVP1305-474N	V RESISTOR,PB SW POINT	470kΩ
	R128	NRVA62D-393N	RESISTOR	39kΩ,1/16W
	R130	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R132	NRSA63J-105N	RESISTOR	1MΩ,1/16W
	R133	NRSA63J-154N	RESISTOR	150kΩ,1/16W
	R134	NRSA63J-683N	RESISTOR	68kΩ,1/16W
	R135	NRSA63J-683N	RESISTOR	68kΩ,1/16W
	R136	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R137	NRSA63J-683N	RESISTOR	68kΩ,1/16W
	R138	NRSA63J-153N	RESISTOR	15kΩ,1/16W
	R139	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R140	NRSA63J-823N	RESISTOR	82kΩ,1/16W
	R141	NRSA63J-105N	RESISTOR	1MΩ,1/16W
	R142	NRSA63J-274N	RESISTOR	270kΩ,1/16W
	R143	NRSA63J-154N	RESISTOR	150kΩ,1/16W
	R144	NRSA63J-154N	RESISTOR	150kΩ,1/16W
	R145	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R146	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R147	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R148	NRSA63J-273N	RESISTOR	27kΩ,1/16W
	R149	NRSA63J-331N	RESISTOR	330Ω,1/16W
	R150	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R151	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R152	NRSA63J-561N	RESISTOR	560Ω,1/16W
	R154	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R155	NRSA63J-473N	RESISTOR	47kΩ,1/16W
	R156	NRSA63J-472N	RESISTOR	4.7kΩ,1/16W
	R157	NRSA63J-393N	RESISTOR	39kΩ,1/16W
	R158	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
	R159	NRSA63J-121N	RESISTOR	120Ω,1/16W
	R160	NRSA63K-2R2N	RESISTOR	2.2Ω,1/16W
	R161	NRSA63K-2R2N	RESISTOR	2.2Ω,1/16W
	R162	NRSA63K-2R2N	RESISTOR	2.2Ω,1/16W
	R163	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R164	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R166	QRSA08J-471YN	RESISTOR	470Ω,1/10W
	R167	NRVA62D-152N	RESISTOR	1.5kΩ,1/16W
	R168	NRVA62D-302N	RESISTOR	3kΩ,1/16W
	R169	QRSA08J-304YN	RESISTOR	300kΩ,1/10W
	R170	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R172	QRSA08J-471YN	RESISTOR	470Ω,1/10W
	R173	NRVA62D-472N	RESISTOR	4.7kΩ,1/16W
	R174	NRVA62D-302N	RESISTOR	3kΩ,1/16W
	R175	QRSA08J-304YN	RESISTOR	300kΩ,1/10W
	R176	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R179	NRVA62D-104N	RESISTOR	100kΩ,1/16W
	R181	PU52108-2R2	POSITIVE THERMISTOR	2.2Ω
	R301	NRSA63J-100N	RESISTOR	10Ω,1/16W
	R302	NRSA63J-823N	RESISTOR	82kΩ,1/16W

⚠	REF. No.	PART No.	PART NAME. DESCRIPTION	
	R303	NRSA63J-470N	RESISTOR	47Ω,1/16W
	R304	NRSA63J-331N	RESISTOR	330Ω,1/16W
	R305	NRSA63J-334N	RESISTOR	330kΩ,1/16W
	R306	NRSA63J-822N	RESISTOR	8.2kΩ,1/16W
	R307	NRSA63J-682N	RESISTOR	6.8kΩ,1/16W
	R308	NRVA62D-104N	RESISTOR	100kΩ,1/16W
	R309	NRVA62D-104N	RESISTOR	100kΩ,1/16W
	R310	NRVA62D-513N	RESISTOR	51kΩ,1/16W
	R311	NRSA63J-331N	RESISTOR	330Ω,1/16W
	R312	NRSA63J-472N	RESISTOR	4.7kΩ,1/16W
	R313	NRVA62D-513N	RESISTOR	51kΩ,1/16W
	R314	NRVA62D-513N	RESISTOR	51kΩ,1/16W
	R315	NRVA62D-243N	RESISTOR	24kΩ,1/16W
	R316	NRSA63J-331N	RESISTOR	330Ω,1/16W
	R317	NRSA63J-472N	RESISTOR	4.7kΩ,1/16W
	R318	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R319	NVP1305-103N	V RESISTOR,AUDIO REC LEVEL	10kΩ
	R320	NRSA63J-822N	RESISTOR	8.2kΩ,1/16W
	R321	NRSA63J-223N	RESISTOR	22kΩ,1/16W
	R322	NRSA63J-185N	RESISTOR	1.8MΩ,1/16W
	R323	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R324	NRSA63J-101N	RESISTOR	100Ω,1/16W
	R325	NRSA63J-183N	RESISTOR	18kΩ,1/16W
	R326	NRSA63J-123N	RESISTOR	12kΩ,1/16W
	R328	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
	R330	NRSA63J-152N	RESISTOR	1.5kΩ,1/16W
	R331	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
	R332	NRSA63J-151N	RESISTOR	150Ω,1/16W
	R333	NRSA63J-272N	RESISTOR	2.7kΩ,1/16W
	R334	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R335	NRSA63J-101N	RESISTOR	100Ω,1/16W
	R336	NVP1305-473N	V RESISTOR,BIAS LEVEL	47kΩ
	R337	NRSA63J-473N	RESISTOR	47kΩ,1/16W
	R338	NRSA63J-473N	RESISTOR	47kΩ,1/16W
	R339	NRSA63K-2R2N	RESISTOR	2.2Ω,1/16W
	R340	NRSA63K-2R2N	RESISTOR	2.2Ω,1/16W
	R341	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R342	NRSA63J-224N	RESISTOR	220kΩ,1/16W
	R343	NRSA63J-562N	RESISTOR	5.6kΩ,1/16W
	R344	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R345	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R346	NRSA63J-562N	RESISTOR	5.6kΩ,1/16W
	R347	NRSA63J-562N	RESISTOR	5.6kΩ,1/16W
	R348	NRSA63J-101N	RESISTOR	100Ω,1/16W
	R349	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R350	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R351	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R401	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R402	NRSA63J-751N	RESISTOR	750Ω,1/16W
	R403	NRSA63J-223N	RESISTOR	22kΩ,1/16W
	R404	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R405	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R406	NRSA63J-104N	RESISTOR	100kΩ,1/16W
	R407	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R408	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R409	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R410	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	R411	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R412	NRSA63J-473N	RESISTOR	47kΩ,1/16W
	R413	NRSA63J-223N	RESISTOR	22kΩ,1/16W
	R414	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R415	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R416	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R417	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R418	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R419	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R420	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R421	NRSA63J-473N	RESISTOR	47kΩ,1/16W
	R422	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R423	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R424	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R425	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R426	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R427	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R428	NRVA62D-753N	RESISTOR	75kΩ,1/16W
	R429	NRSA63J-302N	RESISTOR	3kΩ,1/16W
	R430	NRVA62D-683N	RESISTOR	68kΩ,1/16W
	R431	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R432	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R433	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R434	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R435	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R436	NRSA63J-223N	RESISTOR	22kΩ,1/16W
	R437	NRSA63J-203N	RESISTOR	20kΩ,1/16W
	R438	NRSA63J-203N	RESISTOR	20kΩ,1/16W
	R439	NRSA63J-203N	RESISTOR	20kΩ,1/16W
	R440	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R441	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R442	NRSA63J-203N	RESISTOR	20kΩ,1/16W
	R443	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R445	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R446	NRSA63J-823N	RESISTOR	82kΩ,1/16W
	R447	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R448	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R449	NRSA63J-223N	RESISTOR	22kΩ,1/16W
	R450	NRSA63J-223N	RESISTOR	22kΩ,1/16W
	R451	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R452	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R454	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R455	NRSA63J-223N	RESISTOR	22kΩ,1/16W
	R456	NRSA63J-563N	RESISTOR	56kΩ,1/16W
	R457	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R458	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R459	NRSA63J-470N	RESISTOR	47Ω,1/16W
	R460	NRSA63J-333N	RESISTOR	33kΩ,1/16W
	R461	NRSA63J-105N	RESISTOR	1MΩ,1/16W
	R462	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R463	NRSA63J-472N	RESISTOR	4.7kΩ,1/16W
	R464	NRSA63J-472N	RESISTOR	4.7kΩ,1/16W
	R465	NRSA63J-333N	RESISTOR	33kΩ,1/16W
	R466	NRSA63J-223N	RESISTOR	22kΩ,1/16W
	R467	NRSA63J-223N	RESISTOR	22kΩ,1/16W
	R468	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R469	NRSA63J-103N	RESISTOR	10kΩ,1/16W

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	R470	NRSA63J-151N	RESISTOR	150Ω,1/16W
	R471	NRSA63J-223N	RESISTOR	22kΩ,1/16W
	R472	NRSA63J-223N	RESISTOR	22kΩ,1/16W
	R475	NRSA63J-223N	RESISTOR	22kΩ,1/16W
	R476	NRSA63J-223N	RESISTOR	22kΩ,1/16W
	R477	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R478	NRSA63J-223N	RESISTOR	22kΩ,1/16W
	R479	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R480	NRSA63J-223N	RESISTOR	22kΩ,1/16W
	R481	NRSA63J-223N	RESISTOR	22kΩ,1/16W
	R482	NRSA63J-273N	RESISTOR	27kΩ,1/16W
	R483	NRSA63J-223N	RESISTOR	22kΩ,1/16W
	R484	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R485	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R486	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R487	NRSA63J-223N	RESISTOR	22kΩ,1/16W
	R488	NRSA63J-470N	RESISTOR	47Ω,1/16W
	R489	NRSA63J-223N	RESISTOR	22kΩ,1/16W
	R491	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R492	NRSA63J-223N	RESISTOR	22kΩ,1/16W
	R501	NRSA63J-333N	RESISTOR	33kΩ,1/16W
	R502	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R503	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R505	NRSA63J-333N	RESISTOR	33kΩ,1/16W
	R506	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
	R601	NRSA63J-562N	RESISTOR	5.6kΩ,1/16W
	R602	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R603	NRSA63J-393N	RESISTOR	39kΩ,1/16W
	R604	NRSA63J-393N	RESISTOR	39kΩ,1/16W
	R605	NRSA63K-5R6N	RESISTOR	5.6Ω,1/16W
	R606	NRSA63K-5R6N	RESISTOR	5.6Ω,1/16W
	R607	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R608	NRSA63J-153N	RESISTOR	15kΩ,1/16W
	C1	QCY81EK-473	CAPACITOR	0.047μF,25V
	C2	QEDF1AM-826	E CAPACITOR	82μF,10V
	C3	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C5	QEDF1CM-476	E CAPACITOR	47μF,16V
	C7	QEDF1AM-826	E CAPACITOR	82μF,10V
	C101	QEE81DM-226	TANTAL CAPACITOR	22μF,20V
	C102	QEDF1CM-476	E CAPACITOR	47μF,16V
	C103	QEDF1AM-826	E CAPACITOR	82μF,10V
	C104	QEDF1AM-826	E CAPACITOR	82μF,10V
	C105	QER41CM-106	E CAPACITOR	10μF,16V
	C106	QERF1CM-106	E CAPACITOR	10μF,16V
	C107	QERF0JM-476	E CAPACITOR	47μF,6.3V
	C109	QEPA1HM-105ZE	NP E CAPACITOR	1 μF,50V
	C110	QCYA1HK-102	CAPACITOR	0.001 μF,50V
	C111	QERF1CM-106	E CAPACITOR	10μF,16V
	C112	QCY81EK-104	CAPACITOR	0.1 μF,25V
	C113	QCTA1CH-100	CAPACITOR	10 pF,16V
	C114	QCY81EK-104	CAPACITOR	0.1 μF,25V
	C115	QCYA1HK-102	CAPACITOR	0.001 μF,50V
	C116	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C117	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C118	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C119	QCYA1HK-332	CAPACITOR	0.0033μF,50V

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	C120	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C121	QCYA1HK-562	CAPACITOR	0.0056μF,50V
	C122	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C123	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C124	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C126	QCYA1HK-472	CAPACITOR	0.0047μF,50V
	C127	QEPA1CM-226	E CAPACITOR	22μF,16V
	C128	QFV11HJ-104	MMT CAP	0.1μF,50V
	or	QFZ0095-104Z	MM CAPACITOR	0.1μF,50V
	C129	QCYA1HK-222	CAPACITOR	0.0022μF,50V
	C130	QCYA1HK-222	CAPACITOR	0.0022μF,50V
	C131	QFV11HJ-224	MM CAPACITOR	0.22μF,50V
	or	QFZ0096-224Z	MM CAPACITOR	0.22μF
	C134	QEPA1CM-106ZE	E CAPACITOR	10μF,16V
	C135	QERF1CM-106	E CAPACITOR	10μF,16V
	C136	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C138	NCR21CK-473A	CAPACITOR	0.047μF,16V
	C139	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C140	PU59758-105	CAPACITOR	1μF,16V
	C141	PU59758-105	CAPACITOR	1μF,16V
	C142	PU59758-105	CAPACITOR	1μF,16V
	C143	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C144	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C145	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C146	QCYA1HK-222	CAPACITOR	0.0022μF,50V
	C148	QCYA1HK-222	CAPACITOR	0.0022μF,50V
	C150	PU59758-105	CAPACITOR	1μF,16V
	C151	PU59758-105	CAPACITOR	1μF,16V
	C152	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C153	QCTA1CH-101	CAPACITOR	100pF,16V
	C154	PU59758-105	CAPACITOR	1μF,16V
	C155	YU40470-104	CAPACITOR	0.1μF,50V
	or	PU58948-104	CAPACITOR	0.1μF,50V
	C301	QERF1HM-105	E CAPACITOR	1μF,50V
	C302	NCB31HK-681A	CAPACITOR	680pF,50V
	C304	QERF0JM-336	E CAPACITOR	33μF,6.3V
	C305	QERF0JM-476	E CAPACITOR	47μF,6.3V
	C306	NCB31HK-103A	CAPACITOR	0.01μF,50V
	C307	NCS31HJ-331A	CAPACITOR	330pF,50V
	C308	NCT08CH-101A	CAPACITOR	100pF,50V
	C309	NCT08CH-101A	CAPACITOR	100pF,50V
	C310	NCT08CH-101A	CAPACITOR	100pF,50V
	C311	NCT08CH-101A	CAPACITOR	100pF,50V
	C312	NCT08CH-101A	CAPACITOR	100pF,50V
	C313	NCT08CH-101A	CAPACITOR	100pF,50V
	C314	NCT08CH-101A	CAPACITOR	100pF,50V
	C315	NCT08CH-101A	CAPACITOR	100pF,50V
	C316	NCB31HK-562A	CAPACITOR	0.0056μF,50V
	C317	QERF0JM-476	E CAPACITOR	47μF,6.3V
	C318	QERF1HM-104	E CAPACITOR	0.1μF,50V
	C319	NCB31HK-222A	CAPACITOR	0.0022μF,50V
	C320	QERF0JM-336	E CAPACITOR	33μF,6.3V
	C321	QERF0JM-336	E CAPACITOR	33μF,6.3V
	C322	QERF1HM-105	E CAPACITOR	1μF,50V
	C323	QERF1CM-106	E CAPACITOR	10μF,16V
	C324	QERF1CM-106	E CAPACITOR	10μF,16V
	C325	NCS31HJ-561A	CAPACITOR	560pF,50V

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	C326	QCF81CZ-105	CAPACITOR	1μF,16V
	C328	NCB31HK-562A	CAPACITOR	0.0056μF,50V
	C329	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C330	QER40JM-476	E CAPACITOR	47μF,6.3V
	C331	QERF1CM-106	E CAPACITOR	10μF,16V
	C332	NCB31HK-102A	CAPACITOR	0.001μF,50V
	C333	NCB31HK-332A	CAPACITOR	0.0033μF,50V
	C334	NCB31HK-332A	CAPACITOR	0.0033μF,50V
	C335	NCB31HK-392A	CAPACITOR	0.0039μF,50V
	C336	QFZ9011-333Z	MM CAPACITOR	0.033μF
	C337	QERF1AM-336	E CAPACITOR	33μF,10V
	C338	QERF1EM-475	E CAPACITOR	4.7μF,25V
	C339	NCB31HK-102A	CAPACITOR	0.001μF,50V
	C340	QERF1CM-106	E CAPACITOR	10μF,16V
	C341	QCF81CZ-105	CAPACITOR	1μF,16V
	C342	QCY81EK-473	CAPACITOR	0.047μF,25V
	C401	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C402	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C403	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C404	QERF0JM-476	E CAPACITOR	47μF,6.3V
	C405	QERF1CM-476	E CAPACITOR	47μF,16V
	C406	QERF0JM-476	E CAPACITOR	47μF,6.3V
	C407	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C408	PU59758-105	CAPACITOR	1μF,16V
	C409	NCS31HJ-220A	CAPACITOR	22pF,50V
	C410	NCS31HJ-220A	CAPACITOR	22pF,50V
	C411	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C412	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C413	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C414	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C415	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C416	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C501	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C601	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C602	PU59758-105	CAPACITOR	1μF,16V
	C603	QCTA1CH-271	CAPACITOR	270pF,16V
	C604	NCS31HJ-181A	CAPACITOR	180pF,50V
	C605	NCS31HJ-181A	CAPACITOR	180pF,50V
	C606	NCS31HJ-101A	CAPACITOR	100pF,50V
	L1	PU56181-470	COIL	47μH
	L102	PU56181-470	COIL	47μH
	L103	YU41286-P	SWITCHING TRANSFORMER	
	L104	YU41286-P	SWITCHING TRANSFORMER	
	L105	YU41135-470KY	COIL	47μH
	L301	YU40695-P	EQUALIZER	
⚠	L302	YU40696	OSC TRANSFORMER	
	L303	YU41135-470KY	COIL	47μH
	L304	YU41135-470KY	COIL	47μH
	L601	YU41135-470KY	COIL	47μH
	L602	PU58201-1R2K	COIL	1.2μH
⚠	L603	PU56175	S.TRANS	
	CF401	YU41054	CRYSTAL RESONATOR	

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION
	DD1	YU41251-1-1	DC-DC CONVERTER
⚠	HD1	YU40170	FUSE CLIP,X2
	HS1	YU41210	HEAT SINK
	J1	YU40690	DC JACK
	SCW1	YQ40578	SCREW
	SLD1	YU40467	INSULATOR
	SLD2	YQ20264	FE SHIELD U
	SLD3	YQ41438	FE SHIELD L
	SLD4	YQ41144	SHIELD PLATE
	TP1	YU40581-AY	CHIP TP(2125)
	TP2	YU40581-AY	CHIP TP(2125)
	TP3	YU40581-AY	CHIP TP(2125)
	TP101	YU40581-AY	CHIP TP(2125)
	TP102	YU40581-AY	CHIP TP(2125)
	TP103	YU40581-AY	CHIP TP(2125)
	TP104	YU40581-AY	CHIP TP(2125)
	TP105	YU40581-AY	CHIP TP(2125)
	TP301	YU40581-AY	CHIP TP(2125)
	TP302	YU40581-AY	CHIP TP(2125)
	TP303	YU40581-AY	CHIP TP(2125)
	TP501	YU40581-AY	CHIP TP(2125)
	CN21	YU40096-9	CAP HOUSING
	CN22	YU41220-14	CAP HOUSING,(BOARD TO BOARD)
	CN23	YU40106-15	CAP HOUSING
	CN24	YU40096-3	CAP HOUSING
	CN31	YU40773-14	CAP HOUSING,(BOARD TO BOARD)
	CN32	YU41221-8	CAP HOUSING,(BOARD TO BOARD)
	CN33	YU41221-8	CAP HOUSING,(BOARD TO BOARD)
	CN34	YU41221-8	CAP HOUSING,(BOARD TO BOARD)
	CN35	YU40096-4	CAP HOUSING
	CN41	YU40937-6	CAP HOUSING,(BOARD TO BOARD)
	CN42	YU40096-3	CAP HOUSING
	CN43	YU40108-6	CAP HOUSING
	CN51	YU40684-18	CAP HOUSING,(BOARD TO BOARD)
	CN61	YU40664-20	CAP HOUSING,(BOARD TO BOARD)
⚠	CP1	ICP-F10	CIRCUIT PROTECTOR
⚠	CP2	ICP-F20	CIRCUIT PROTECTOR
⚠	CP3	ICP-F20	CIRCUIT PROTECTOR
⚠	CP4	ICP-F20	CIRCUIT PROTECTOR
⚠	CP5	ICP-F15	CIRCUIT PROTECTOR
⚠	CP6	ICP-F15	CIRCUIT PROTECTOR
⚠	F1	QMF51E2-3R15	FUSE,NOT INCL MAIN BOARD ASSY

— CAPSTAN LOCK-2 BOARD ASSEMBLY —

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	PWBA	YB20264A	CAPSTAN LOCK-2 BOARD ASSY	
	IC106	TC4S66F	IC	
	IC107	TC4S66F	IC	
	Q119	DTC144EU	TRANSISTOR	
	D106	DA204K	DIODE	
	D108	DA204K	DIODE	
	R104	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R182	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
	C108	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C156	QCFA1EZ-104	CAPACITOR	0.1μF,25V

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Y/C BOARD ASSEMBLY <02>

REF. No.	PART No.	PART NAME, DESCRIPTION
PWBA	YB10047A-02	Y/C BOARD ASSY
IC1	BA7288K	IC
IC2	MSM6965-3MS	IC
IC3	AN8009	IC
IC101	LA7330	IC
IC601	M5218FP	IC
Q1	2SC4081(QRS)	TRANSISTOR
Q2	2SC4081(QRS)	TRANSISTOR
Q4	2SA1576(QRS)	TRANSISTOR
Q5	2SC4081(QRS)	TRANSISTOR
Q6	2SC4081(QRS)	TRANSISTOR
Q11	2SC4081(QRS)	TRANSISTOR
Q12	DTC144EU	TRANSISTOR
Q14	2SA1576(QRS)	TRANSISTOR
Q15	2SC4081(QRS)	TRANSISTOR
Q16	2SA1576(QRS)	TRANSISTOR
Q21	2SB624-T2BBV4	TRANSISTOR
Q22	2SB624-T2BBV4	TRANSISTOR
Q23	DTC144EU	TRANSISTOR
Q24	2SB624-T2BBV4	TRANSISTOR
Q25	DTC144EU	TRANSISTOR
Q28	2SB624-T2BBV4	TRANSISTOR
Q29	DTC144EU	TRANSISTOR
Q101	2SC4081(QRS)	TRANSISTOR
Q102	2SC4081(QRS)	TRANSISTOR
Q103	2SC4081(QRS)	TRANSISTOR
Q104	2SC4081(QRS)	TRANSISTOR
D2	DAN202U	DIODE
D4	DAN202U	DIODE
D5	DAN202U	DIODE
D6	DAN202U	DIODE
D7	DAN202U	DIODE
D8	DAN202U	DIODE

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	D10	DA204U	DIODE	
	D11	DA204U	DIODE	
	D12	DAN202U	DIODE	
	D13	DAN202U	DIODE	
	D15	RD22ESB	ZENER DIODE	
	R1	NRSA63J-822N	RESISTOR	8.2kΩ,1/16W
	R2	NRSA63J-822N	RESISTOR	8.2kΩ,1/16W
	R3	NRSA63J-821N	RESISTOR	820Ω,1/16W
	R4	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R5	NRSA63J-272N	RESISTOR	2.7kΩ,1/16W
	R6	NRSA63J-271N	RESISTOR	270Ω,1/16W
	R7	NRSA63J-122N	RESISTOR	1.2kΩ,1/16W
	R8	NRSA63J-681N	RESISTOR	680Ω,1/16W
	R9	NRSA63J-331N	RESISTOR	330Ω,1/16W
	R10	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R13	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R14	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R15	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R16	NRSA63J-391N	RESISTOR	390Ω,1/16W
	R17	NRSA63J-821N	RESISTOR	820Ω,1/16W
	R18	NRSA63J-391N	RESISTOR	390Ω,1/16W
	R19	NRSA63J-333N	RESISTOR	33kΩ,1/16W
	R20	NRSA63J-153N	RESISTOR	15kΩ,1/16W
	R21	NRSA63J-152N	RESISTOR	1.5kΩ,1/16W
	R22	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R23	NRSA63J-821N	RESISTOR	820Ω,1/16W
	R24	NRSA63J-182N	RESISTOR	1.8kΩ,1/16W
	R28	NRSA63J-101N	RESISTOR	100Ω,1/16W
	R31	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
	R32	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R33	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R36	NRSA63J-472N	RESISTOR	4.7kΩ,1/16W
	R37	NRSA63J-471N	RESISTOR	470Ω,1/16W
	R38	NRSA63J-333N	RESISTOR	33kΩ,1/16W
	R39	NRSA63J-153N	RESISTOR	15kΩ,1/16W
	R40	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R42	NRSA63J-272N	RESISTOR	2.7kΩ,1/16W
	R43	NRSA63J-331N	RESISTOR	330Ω,1/16W
	R44	NRSA63J-203N	RESISTOR	20kΩ,1/16W
	R45	NRSA63J-203N	RESISTOR	20kΩ,1/16W
	R46	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R47	NRSA63J-152N	RESISTOR	1.5kΩ,1/16W
	R48	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R50	NRSA63J-153N	RESISTOR	15kΩ,1/16W
	R52	NRSA63J-333N	RESISTOR	33kΩ,1/16W
	R53	NRSA63J-273N	RESISTOR	27kΩ,1/16W
	R54	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R55	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R57	NRSA63J-563N	RESISTOR	56kΩ,1/16W
	R58	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
	R59	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R60	NRSA63J-102N	RESISTOR	1kΩ,1/16W

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	R61	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R62	NRSA63J-272N	RESISTOR	2.7kΩ,1/16W
	R63	NRSA63J-104N	RESISTOR	100kΩ,1/16W
	R64	NRSA63J-121N	RESISTOR	120Ω,1/16W
	R65	NRSA63J-121N	RESISTOR	120Ω,1/16W
	R66	NRSA63J-824N	RESISTOR	820kΩ,1/16W
	R67	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
	R70	QRD161J-750	RESISTOR	75Ω,1/6W
	R71	NRSA63J-152N	RESISTOR	1.5kΩ,1/16W
	R72	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R73	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R74	NRSA63J-271N	RESISTOR	270Ω,1/16W
	R85	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R86	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R87	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R88	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R89	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R91	NRSA63J-152N	RESISTOR	1.5kΩ,1/16W
	R92	NRSA63J-332N	RESISTOR	3.3kΩ,1/16W
	R93	NRSA63J-152N	RESISTOR	1.5kΩ,1/16W
	R94	NRSA63J-332N	RESISTOR	3.3kΩ,1/16W
	R95	NRSA63J-122N	RESISTOR	1.2kΩ,1/16W
	R96	NRSA63J-333N	RESISTOR	33kΩ,1/16W
	R98	NRSA63J-333N	RESISTOR	33kΩ,1/16W
	R99	NRSA63J-152N	RESISTOR	1.5kΩ,1/16W
	R103	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R104	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R105	NRSA63J-151N	RESISTOR	150Ω,1/16W
	R106	NRSA63J-332N	RESISTOR	3.3kΩ,1/16W
	R107	NRSA63J-151N	RESISTOR	150Ω,1/16W
	R109	NRSA63J-821N	RESISTOR	820Ω,1/16W
	R110	NRSA63J-122N	RESISTOR	1.2kΩ,1/16W
	R111	NRSA63J-223N	RESISTOR	22kΩ,1/16W
	R112	NRSA63J-822N	RESISTOR	8.2kΩ,1/16W
	R114	NRSA63J-104N	RESISTOR	100kΩ,1/16W
	R115	NRSA63J-223N	RESISTOR	22kΩ,1/16W
	R116	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
	R117	NRSA63J-392N	RESISTOR	3.9kΩ,1/16W
	R118	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R119	NRSA63J-152N	RESISTOR	1.5kΩ,1/16W
	R120	NRSA63J-391N	RESISTOR	390Ω,1/16W
	R121	NRSA63J-151N	RESISTOR	150Ω,1/16W
	R122	NRSA63J-122N	RESISTOR	1.2kΩ,1/16W
	R123	NRSA63J-471N	RESISTOR	470Ω,1/16W
	R124	NRSA63J-122N	RESISTOR	1.2kΩ,1/16W
	R125	NRSA63J-562N	RESISTOR	5.6kΩ,1/16W
	R126	NRSA63J-821N	RESISTOR	820Ω,1/16W
	R127	NRSA63J-473N	RESISTOR	47kΩ,1/16W
	R128	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R129	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R201	NVP1305-222N	V RESISTOR,REC FM LEVEL	2.2kΩ
	R202	NVP1305-222N	V RESISTOR,PB RF EQ	2.2kΩ
	R203	NVP1305-473N	V RESISTOR,PB Y LEVEL	47kΩ
	R204	NVP1305-683N	V RESISTOR,DARK CLIP	68kΩ
	R205	NVP1305-104N	V RESISTOR,WHITE CLIP	100kΩ

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	R206	NVP1305-473N	V RESISTOR,CARRIER	47kΩ
	R207	NVP1305-103N	V RESISTOR,DEVIATION	10kΩ
	R208	NVP1305-103N	V RESISTOR,EE Y LEVEL	10kΩ
	R209	NVP1305-103N	V RESISTOR,EE COLOR LEVEL	10kΩ
	R210	NVP1305-102N	V RESISTOR,1H DL SIG LEVEL	1kΩ
	R211	NVP1305-221N	V RESISTOR,REC COLOR LEVEL	220Ω
	R212	NVP1305-102N	V RESISTOR,PB C ACC INPUT LEV	1kΩ
	R213	NVP1305-102N	V RESISTOR,PB COLOR LEVEL	1kΩ
	R601	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R602	NRSA63J-563N	RESISTOR	56kΩ,1/16W
	R603	NRSA63J-182N	RESISTOR	1.8kΩ,1/16W
	R605	NRSA63J-563N	RESISTOR	56kΩ,1/16W
	R606	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R607	NRSA63J-123N	RESISTOR	12kΩ,1/16W
	R608	NRSA63J-392N	RESISTOR	3.9kΩ,1/16W
	R609	NRSA63J-151N	RESISTOR	150Ω,1/16W
	R610	QRD161J-102	RESISTOR	1kΩ,1/6W
	R611	QRD161J-102	RESISTOR	1kΩ,1/6W
	R613	NRSA63J-104N	RESISTOR	100kΩ,1/16W
	B1	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	B3	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	C1	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C2	NCS31HJ-121A	CAPACITOR	120pF,50V
	C3	NCS31HJ-470A	CAPACITOR	47pF,50V
	C4	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C5	NCS31HJ-330A	CAPACITOR	33pF,50V
	C6	NCS31HJ-221A	CAPACITOR	220pF,50V
	C7	NCS31HJ-121A	CAPACITOR	120pF,50V
	C8	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C9	QER60JM-476	E CAPACITOR	47μF,6.3V
	C12	NCS31HJ-121A	CAPACITOR	120pF,50V
	C13	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C14	NCS31HJ-270A	CAPACITOR	27pF,50V
	C15	NCS31HJ-3R0A	CAPACITOR	3pF,50V
	C16	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C17	NCS31HJ-560A	CAPACITOR	56pF,50V
	C18	NCS31HJ-390A	CAPACITOR	39pF,50V
	C19	NCS31HJ-181A	CAPACITOR	180pF,50V
	C22	NCS31HJ-470A	CAPACITOR	47pF,50V
	C23	QER60JM-476	E CAPACITOR	47μF,6.3V
	C24	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C25	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C36	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C37	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C38	NCS31HJ-470A	CAPACITOR	47pF,50V
	C39	NCS31HJ-101A	CAPACITOR	100pF,50V
	C40	QER61CM-106GZ	E CAPACITOR	10μF,16V
	C43	QCTA1CH-391	CAPACITOR	390pF,16V
	C44	QER61CM-106GZ	E CAPACITOR	10μF,16V
	C45	QER61CM-106GZ	E CAPACITOR	10μF,16V
	C46	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C47	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C48	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C49	NCS31HJ-101A	CAPACITOR	100pF,50V

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	C51	QER61HM-105GZ	E CAPACITOR	1μF,50V
	C52	QEE81AM-476	T.CAP	
	C53	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C54	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C55	QER61EM-335GZ	E CAPACITOR	3.3μF,25V
	C56	QER61HM-224GZ	E CAPACITOR	0.22μF,50V
	C57	QER61EM-335GZ	E CAPACITOR	3.3μF,25V
	C58	QER61CM-475GZ	E CAPACITOR	4.7μF,16V
	C59	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C60	QCYA1HK-332	CAPACITOR	0.0033μF,50V
	C61	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C69	QER61CM-476GZ	E CAPACITOR	47μF,16V
	C70	QEKC0HM-477	E CAPACITOR	470μF,5V
	C71	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C72	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C73	QER61HM-334GZ	E CAPACITOR	0.33μF,50V
	C74	QER61CM-475GZ	E CAPACITOR	4.7μF,16V
	C75	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C76	QEE81CM-476	TANTAL CAPACITOR	47μF,16V
	C77	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C78	QER60JM-476	E CAPACITOR	47μF,6.3V
	C79	NCS31HJ-390A	CAPACITOR	39pF,50V
	C87	QEE41EM-225	TANTAL CAPACITOR	2.2μF,25V
	C88	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C89	NCS31HJ-100A	CAPACITOR	10pF,50V
	C91	QEK61AM-107	E CAPACITOR	100μF,10V
	C92	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C102	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C103	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C104	QER61HM-105GZ	E CAPACITOR	1μF,50V
	C105	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C106	QCYA1HK-333	CAPACITOR	0.033μF,50V
	C107	QCYA1HK-333	CAPACITOR	0.033μF,50V
	C108	QCYA1HK-153	CAPACITOR	0.015μF,50V
	C109	NCS31HJ-820A	CAPACITOR	82pF,50V
	C110	NCS31HJ-100A	CAPACITOR	10pF,50V
	C111	NCS31HJ-820A	CAPACITOR	82pF,50V
	C112	NCB31HK-272A	CAPACITOR	0.0027μF,50V
	C113	QER61HM-105GZ	E CAPACITOR	1μF,50V
	C114	NCS31HJ-151A	CAPACITOR	150pF,50V
	C115	NCS31HJ-150A	CAPACITOR	15pF,50V
	C116	NCS31HJ-151A	CAPACITOR	150pF,50V
	C117	QER61HM-105GZ	E CAPACITOR	1μF,50V
	C118	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C119	NCR21CK-473A	CAPACITOR	0.047μF,16V
	C120	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C121	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C123	QER41HM-105	E CAPACITOR	1μF,50V
	C124	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C125	NCS31HJ-330A	CAPACITOR	33pF,50V
	C126	NCS31HJ-331A	CAPACITOR	330pF,50V
	C128	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C129	QEE81AM-476	TANTAL CAPACITOR	47μF,10V
	C130	NCS31HJ-101A	CAPACITOR	100pF,50V

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	C131	NCS31HJ-150A	CAPACITOR	15pF,50V
	C132	NCS31HJ-100A	CAPACITOR	10pF,50V
	C133	NCB31HK-103A	CAPACITOR	0.01μF,50V
	C136	NCB31HK-103A	CAPACITOR	0.01μF,50V
	C137	NCB31HK-103A	CAPACITOR	0.01μF,50V
	C138	NCB31HK-103A	CAPACITOR	0.01μF,50V
	C139	NCB31HK-103A	CAPACITOR	0.01μF,50V
	C140	NCB31HK-103A	CAPACITOR	0.01μF,50V
	C601	QERF1HM-105	E CAPACITOR	1μF,50V
	C602	NCS31HJ-101A	CAPACITOR	100pF,50V
	C603	QEE81VM-474	E CAPACITOR	0.47μF,35V
	C604	QCF81CZ-105	CAPACITOR	1μF,16V
	C605	QERF0JM-476	E CAPACITOR	47μF,6.3V
	C606	QERF1CM-106	E CAPACITOR	10μF,16V
	C607	QERF0JM-107	E CAPACITOR	100μF,6.3V
	C608	NCB31HK-102A	CAPACITOR	0.001μF,50V
	C609	NCB31HK-102A	CAPACITOR	0.001μF,50V
	L1	PU59152-121J	COIL	120μH
	L2	PU59152-150J	COIL	15μH
	L3	PU59152-220J	COIL	22μH
	L4	YU40589-271JY	COIL	270μH
	L5	PU59152-680J	COIL	68μH
	L6	YU40589-470JY	COIL	47μH
	L8	PU59152-680J	COIL	68μH
	L9	PU59152-560J	COIL	56μH
	L10	PU59152-820J	COIL	82μH
	L11	PU59152-220J	COIL	22μH
	L12	YU40589-331JY	COIL	330μH
	L13	YU40589-470JY	COIL	47μH
	L15	PU59152-180J	COIL	18μH
	L21	PU59152-100J	COIL	10μH
	L22	PU59152-560J	COIL	56μH
	L24	YU40589-470JY	COIL	47μH
	L30	YU40589-470JY	COIL	47μH
	L31	YU40589-470JY	COIL	47μH
	L32	YU40589-470JY	COIL	47μH
	L33	PU59152-121J	COIL	120μH
	L101	YU40589-102JY	COIL	1mH
	L102	YU40589-331JY	COIL	330μH
	L103	YU40941-682	COIL	6.8mH
	L104	YU40589-271JY	COIL	270μH
	L105	PU59152-470J	COIL	47μH
	L106	PU59152-181J	COIL	180μH
	L107	PU59152-180J	COIL	18μH
	L108	PU59152-1R0J	COIL	1μH
	L109	YU40589-470JY	COIL	47μH
	L110	PU59152-470J	COIL	47μH
	L111	PU59152-150J	COIL	15μH
	EQ1	YU40942	EQUALIZER	
	EQ101	YU41131	EQUALIZER	
	or	YU41228	EQUALIZER	
	LPF1	YU40944	LOW PASS FILTER	
	LPF2	YU40945	LOW PASS FILTER	
	LPF1	YU40944	LOW PASS FILTER	
	LPF2	YU40945	LOW PASS FILTER	

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION
	DL101	YU40948-2	2H DELAY LINE
⚠	X101	YU40814	CRYSTAL RESONATOR
	J1	YU41226-1-1	A/V JACK
	TP1	YU40581-AY	CHIP TP(2125)
	TP2	YU40581-AY	CHIP TP(2125)
	TP3	YU40581-AY	CHIP TP(2125)
	TP4	YU40581-AY	CHIP TP(2125)
	TP6	YU40581-AY	CHIP TP(2125)
	TP8	YU40581-AY	CHIP TP(2125)
	TP13	YU40581-AY	CHIP TP(2125)
	TP14	YU40581-AY	CHIP TP(2125)
	TP15	YU40581-AY	CHIP TP(2125)
	SPC1	YQM30029-31	SPACER
	CN12	YU40105-8	CAP HOUSING,(BOARD TO BOARD)
	CN13	YU40105-8	CAP HOUSING,(BOARD TO BOARD)
	CN14	YU40105-8	CAP HOUSING,(BOARD TO BOARD)
	CN15	YU40684-8	CAP HOUSING,(BOARD TO BOARD)
	CN601	PU58255-3	CAP HOUSING

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PRE REC BOARD ASSEMBLY <03>

REF. No.	PART No.	PART NAME, DESCRIPTION
PWBA	BW7719B	PRE/REC AMP

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DRUM MDA BOARD ASSEMBLY <04>

REF. No.	PART No.	PART NAME, DESCRIPTION	
PWBA	YB20217A-01	DRUM MDA BOARD ASSY	
IC1	VC5035	IC	
D1	MA141WA	DIODE	
R1	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R2	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R3	QRSA08J-101YN	RESISTOR	100Ω,1/10W
R4	QRSA08J-120YN	RESISTOR	12Ω,1/10W
R5	QRSA08J-120YN	RESISTOR	12Ω,1/10W
R6	QRSA08J-120YN	RESISTOR	12Ω,1/10W
R7	QRG125J-R68AR	MF RESISTOR	0.68Ω,1/2W
R8	QRSA08J-273YN	RESISTOR	27kΩ,1/10W
R9	QRSA08J-274YN	RESISTOR	270kΩ,1/10W
R10	QRSA08J-202YN	RESISTOR	2kΩ,1/10W
R11	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R12	QRSA08J-184YN	RESISTOR	180kΩ,1/10W
R13	QRSA08J-470YN	RESISTOR	47Ω,1/10W
R14	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R15	QRSA08J-431YN	RESISTOR	430Ω,1/10W
R16	QRSA08J-471YN	RESISTOR	470Ω,1/10W
C1	QCYA1HK-332	CAPACITOR	0.0033μF,50V
C3	QCYA1HK-471	CAPACITOR	470pF,50V
C4	QERF1CM-106	E CAPACITOR	10μF,16V
C5	NCR21CK-473A	CAPACITOR	0.047μF,16V

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	C6	QCY81CK-224ZLM	CAPACITOR	0.22μF,16V
	C7	QCY81CK-224ZLM	CAPACITOR	0.22μF,16V
	C8	QCY81CK-224ZLM	CAPACITOR	0.22μF,16V
	C9	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C10	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C11	QERF1HM-474	E CAPACITOR	0.47μF,50V
	C12	QCTA1CH-271	CAPACITOR	270pF,16V
	C13	QERF1CM-106	E CAPACITOR	10μF,16V
	C14	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C15	QCYA1HK-222	CAPACITOR	0.0022μF,50V
	C16	QCYA1HK-222	CAPACITOR	0.0022μF,50V
	C17	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	SW1	YU40177-2	PUSH SWITCH	
	SLD1	YU41030	SHEET	
		or YU41288	SHEET	
	CN1	YU40682-14	CAP HOUSING,(BOARD TO BOARD)	
	CN2	YU40107-15	CAP HOUSING	
	CN3	YU40096-2	CAP HOUSING	
	CN4	YU40096-3	CAP HOUSING	

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TRIGGER SW BOARD ASSEMBLY <05>

PWBA	YB20218A-01	TRIGGER BOARD ASSY
SW1	PU59843	TACT SWITCH
CN1	PU58655-2	CAP HOUSING

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SENSOR BOARD ASSEMBLY <08>

PWBA	YS40067A	SENSOR BOARD ASSY

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VIDEO BOARD ASSEMBLY <11>

(for EK model and EG model #1167~)

PWBA	YB20286G1	VIDEO BOARD ASSY
	or YB20220G1-03	
IC1	HA118025MP	IC
IC2	UPC2371GH	IC
IC3	MV1095	IC
IC4	HA118118MA-XE	IC
IC5	AN1393S	IC
IC8	TC4S71F	IC
IC20	YU41263	IC,SC MODULE
IC201	UPD75006GB-519	IC
IC202	UPD6451GT-603-X	IC
IC203	S-8052ANB-NE-X	IC
IC204	S-8054HN-CB-X	IC
IC205	TC7S00F	IC
IC206	UPC358G2	IC

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	Q1	2SA1532(BC)	TRANSISTOR	
	Q2	2SC3936(BC)	TRANSISTOR	
	Q3	2SC3936(BC)	TRANSISTOR	
	Q4	2SC3936(BC)	TRANSISTOR	
	Q6	2SC3936(BC)	TRANSISTOR	
	Q7	2SC3936(BC)	TRANSISTOR	
	Q8	2SC3936(BC)	TRANSISTOR	
	Q9	2SC3936(BC)	TRANSISTOR	
	Q10	2SC3936(BC)	TRANSISTOR	
	Q13	2SA1532(BC)	TRANSISTOR	
	Q16	2SC3936(BC)	TRANSISTOR	
	Q17	2SC3936(BC)	TRANSISTOR	
	Q18	2SC3936(BC)	TRANSISTOR	
	Q19	2SC3936(BC)	TRANSISTOR	
	Q20	2SC3936(BC)	TRANSISTOR	
	Q21	2SC3936(BC)	TRANSISTOR	
	Q22	2SC3936(BC)	TRANSISTOR	
	Q23	2SA1532(BC)	TRANSISTOR	
	Q24	2SC3936(BC)	TRANSISTOR	
	Q25	2SC3936(BC)	TRANSISTOR	
	Q26	DTC114EU	TRANSISTOR	
	Q28	2SC3936(BC)	TRANSISTOR	
	Q29	2SC3936(BC)	TRANSISTOR	
	Q30	2SC3936(BC)	TRANSISTOR	
	Q33	2SC3936(BC)	TRANSISTOR	
	Q34	2SC3936(BC)	TRANSISTOR	
	Q35	2SC3936(BC)	TRANSISTOR	
	Q38	2SC3936(BC)	TRANSISTOR	
	Q39	2SC3936(BC)	TRANSISTOR	
	D1	MA141WK	DIODE	
	D2	MA141WK	DIODE	
	D3	MA141WK	DIODE	
	D4	MA141WK	DIODE	
	D5	MA141WK	DIODE	
	D7	MA141WK	DIODE	
	D8	MA141WK	DIODE	
	D201	MA704	DIODE	
⚠	D202	MA704	DIODE	
	D203	RB451F	DIODE	
	R1	QRSA08J-182YN	RESISTOR	1.8kΩ,1/10W
	R2	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R3	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R4	NRVA62D-222N	RESISTOR	2.2kΩ,1/16W
	R5	NRVA62D-271N	RESISTOR	270Ω,1/16W
	R6	NRVA62D-181N	RESISTOR	180Ω,1/16W
	R7	NRVA62D-242N	RESISTOR	2.4kΩ,1/16W
	R8	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R9	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R10	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R11	QRSA08J-822YN	RESISTOR	8.2kΩ,1/10W
	R12	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R13	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R14	QRSA08J-392YN	RESISTOR	3.9kΩ,1/10W
	R15	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R16	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	R17	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
	R18	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R19	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R20	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R21	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
	R22	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R23	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R24	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
	R25	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R26	QRSA08J-182YN	RESISTOR	1.8kΩ,1/10W
	R27	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R28	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R29	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R32	NRVA62D-562N	RESISTOR	5.6kΩ,1/16W
	R33	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R35	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R36	QRSA08J-100YN	RESISTOR	10Ω,1/10W
	R37	NVP1302-102N	V RESISTOR,COLOR LEVEL	1kΩ
	R38	QRSA08J-471YN	RESISTOR	470Ω,1/10W
	R39	NVP1302-103N	V RESISTOR,BURST PHASE	10kΩ
	R40	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R41	QRSA08J-150YN	RESISTOR	15Ω,1/10W
	R42	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R43	NVP1302-472N	V RESISTOR,BURST LEVEL	4.7kΩ
	R44	NRVA62D-332N	RESISTOR	3.3kΩ,1/16W
	R45	NRVA62D-623N	RESISTOR	62kΩ,1/16W
	R46	NRVA62D-182N	RESISTOR	1.8kΩ,1/16W
	R47	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
	R48	NVP1302-153N	V RESISTOR,B SET UP	15kΩ
	R49	NVP1302-153N	V RESISTOR,R SET UP	15kΩ
	R50	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R55	QRSA08J-681YN	RESISTOR	680Ω,1/10W
	R56	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
	R57	QRSA08J-681YN	RESISTOR	680Ω,1/10W
	R58	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
	R59	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R60	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R61	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
	R62	QRD161J-223	RESISTOR	22kΩ,1/6W
	R63	QRSA08J-394YN	RESISTOR	390kΩ,1/10W
	R65	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R66	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R67	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R68	NVP1302-103N	V RESISTOR,R ENCODER BAL	10kΩ
	R69	NVP1302-103N	V RESISTOR,B ENCODER BAL	10kΩ
	R70	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R71	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
	R72	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R73	NVP1302-103N	V RESISTOR,B-Y LEVEL	10kΩ
	R74	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R75	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R76	NVP1302-103N	V RESISTOR,COLOR DIF OFFSET	10kΩ
	R77	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R78	QRSA08J-123YN	RESISTOR	12kΩ,1/10W
	R79	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R80	QRSA08J-393YN	RESISTOR	39kΩ,1/10W

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	R81	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R82	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
	R83	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
	R84	QRSA08J-303YN	RESISTOR	30kΩ,1/10W
	R85	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
	R86	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R87	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R88	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R89	QRSA08J-392YN	RESISTOR	3.9kΩ,1/10W
	R90	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R91	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R92	QRSA08J-182YN	RESISTOR	1.8kΩ,1/10W
	R94	NRVA62D-332N	RESISTOR	3.3kΩ,1/16W
	R95	NRVA62D-822N	RESISTOR	8.2kΩ,1/16W
	R96	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
	R97	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R98	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R99	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R100	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R101	NRVA62D-393N	RESISTOR	39kΩ,1/16W
	R102	NRVA62D-303N	RESISTOR	30kΩ,1/16W
	R103	NRVA62D-243N	RESISTOR	24kΩ,1/16W
	R104	NRVA62D-243N	RESISTOR	24kΩ,1/16W
	R105	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R106	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R107	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R108	QRSA08J-563YN	RESISTOR	56kΩ,1/10W
	R109	QRSA08J-563YN	RESISTOR	56kΩ,1/10W
	R110	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
	R111	QRSA08J-243YN	RESISTOR	24kΩ,1/10W
	R112	NRVA62D-223N	RESISTOR	22kΩ,1/16W
	R113	NRVA62D-223N	RESISTOR	22kΩ,1/16W
	R114	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R115	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R116	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
	R117	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
	R118	QRSA08J-334YN	RESISTOR	330kΩ,1/10W
	R119	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
	R120	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R121	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R122	NRVA62D-223N	RESISTOR	22kΩ,1/16W
	R123	NRVA62D-273N	RESISTOR	27kΩ,1/16W
	R125	NRVA62D-103N	RESISTOR	10kΩ,1/16W
	R126	NRVA62D-103N	RESISTOR	10kΩ,1/16W
	R128	NRVA62D-243N	RESISTOR	24kΩ,1/16W
	R129	NRVA62D-273N	RESISTOR	27kΩ,1/16W
	R130	NRVA62D-273N	RESISTOR	27kΩ,1/16W
	R131	NRVA62D-243N	RESISTOR	24kΩ,1/16W
	R132	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R133	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R134	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
	R135	NVP1302-473N	V RESISTOR,B LEVEL	47kΩ
	R136	QRSA08J-393YN	RESISTOR	39kΩ,1/10W
	R137	QRSA08J-273YN	RESISTOR	27kΩ,1/10W
	R138	NVP1302-473N	V RESISTOR,R LEVEL	47kΩ
	R139	QRSA08J-273YN	RESISTOR	27kΩ,1/10W
	R140	NVP1302-225N	V RESISTOR,R AV OFFSET	2.2MΩ

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	R141	NVP1302-225N	V RESISTOR,B AW OFFSET	2.2MΩ
	R142	QRSA08J-393YN	RESISTOR	39kΩ,1/10W
	R143	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R147	NRVA62D-333N	RESISTOR	33kΩ,1/16W
	R148	NRVA62D-683N	RESISTOR	68kΩ,1/16W
	R149	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R150	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R151	QRSA08J-123YN	RESISTOR	12kΩ,1/10W
	R152	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R153	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R154	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R155	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R156	QRSA08J-912YN	RESISTOR	9.1kΩ,1/10W
	R157	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R158	QRSA08J-101YN	RESISTOR	100Ω,1/10W
	R159	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
	R161	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
	R162	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
	R163	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
	R164	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R165	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R166	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R167	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
	R168	QRSA08J-822YN	RESISTOR	8.2kΩ,1/10W
	R169	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R170	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R171	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
	R172	NRVA62D-182N	RESISTOR	1.8kΩ,1/16W
	R173	NRVA62D-222N	RESISTOR	2.2kΩ,1/16W
	R174	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R175	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R176	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R177	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R178	NRVA62D-391N	RESISTOR	390Ω,1/16W
	R179	NRVA62D-363N	RESISTOR	36kΩ,1/16W
	R180	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R181	QRSA08J-100YN	RESISTOR	10Ω,1/10W
	R182	QRSA08J-822YN	RESISTOR	8.2kΩ,1/10W
	R183	QRSA08J-123YN	RESISTOR	12kΩ,1/10W
	R184	QRSA08J-182YN	RESISTOR	1.8kΩ,1/10W
	R185	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
	R186	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R187	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
	R189	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R190	QRSA08J-392YN	RESISTOR	3.9kΩ,1/10W
	R191	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
	R192	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R193	QRSA08J-272YN	RESISTOR	2.7kΩ,1/10W
	R194	NRVA62D-272N	RESISTOR	2.7kΩ,1/16W
	R195	NRVA62D-222N	RESISTOR	2.2kΩ,1/16W
	R196	QRSA08J-182YN	RESISTOR	1.8kΩ,1/10W
	R197	QRSA08J-182YN	RESISTOR	1.8kΩ,1/10W
	R198	QRSA08J-182YN	RESISTOR	1.8kΩ,1/10W
	R199	QRSA08J-182YN	RESISTOR	1.8kΩ,1/10W
⚠	R201	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R202	QRSA08J-104YN	RESISTOR	100kΩ,1/10W

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	R203	QRSA08J-125YN	RESISTOR	1.2MΩ,1/10W
	R204	QRSA08J-125YN	RESISTOR	1.2MΩ,1/10W
	R205	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
	R206	QRSA08J-155YN	RESISTOR	1.5MΩ,1/10W
	R207	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
	R208	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R209	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R210	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R211	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R212	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R213	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R214	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R215	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R216	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R217	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R218	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R219	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R220	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R221	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R224	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R225	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R226	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R228	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R229	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R230	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R231	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R232	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R233	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R234	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R235	QRD161J-222	RESISTOR	2.2kΩ,1/6W
	R236	QRSA08J-224YN	RESISTOR	220kΩ,1/10W
	R237	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R238	QRSA08J-101YN	RESISTOR	100Ω,1/10W
	R289	QRSA08J-101YN	RESISTOR	100Ω,1/10W
	C1	QED40JM-127	E CAPACITOR	120μF,6.3V
	C2	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C3	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C4	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C5	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C6	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C7	PU59913-473K	CAPACITOR	0.047μF,25V
	or	NCR21CK-473A	CAPACITOR	0.047μF,16V
	C8	NEH31CM-106NZ	E CAPACITOR	10μF,16V
	or	NEA21CM-106NZ	E CAPACITOR	10μF,16V
	C9	NEH31CM-106NZ	E CAPACITOR	10μF,16V
	or	NEA21CM-106NZ	E CAPACITOR	10μF,16V
	C10	PU59913-473K	CAPACITOR	0.047μF,25V
	or	NCR21CK-473A	CAPACITOR	0.047μF,16V
	C11	PU59913-473K	CAPACITOR	0.047μF,25V
	or	NCR21CK-473A	CAPACITOR	0.047μF,16V
	C12	NEH31CM-106NZ	E CAPACITOR	10μF,16V
	or	NEA21CM-106NZ	E CAPACITOR	10μF,16V
	C13	NEH31CM-106NZ	E CAPACITOR	10μF,16V
	or	NEA21CM-106NZ	E CAPACITOR	10μF,16V
	C14	PU59913-473K	CAPACITOR	0.047μF,25V
	or	NCR21CK-473A	CAPACITOR	0.047μF,16V
	C15	QCTA1CH-390	CAPACITOR	39pF,16V

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	C16	NEH10JM-226NZ	E CAPACITOR	22μF,6.3V
		or NEA20JM-226NZ	E CAPACITOR	22μF,6.3V
	C17	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C18	QCF81CZ-105	CAPACITOR	1μF,16V
	C19	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C20	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C21	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C22	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C23	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C24	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C25	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C26	QCTA1CH-150	CAPACITOR	15pF,16V
	C27	PU59913-473K	CAPACITOR	0.047μF,25V
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C28	PU59913-473K	CAPACITOR	0.047μF,25V
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C29	QCTA1CH-330	CAPACITOR	33pF,16V
	C30	QCTA1CH-330	CAPACITOR	33pF,16V
	C31	NEH10JM-226NZ	E CAPACITOR	22μF,6.3V
		or NEA20JM-226NZ	E CAPACITOR	22μF,6.3V
	C32	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C33	NEH10JM-226NZ	E CAPACITOR	22μF,6.3V
		or NEA20JM-226NZ	E CAPACITOR	22μF,6.3V
	C34	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C35	PU59913-473K	CAPACITOR	0.047μF,25V
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C36	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C37	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C38	PU59913-473K	CAPACITOR	0.047μF,25V
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C39	NEH10GM-336NZ	E CAPACITOR	33μF,4V
	C40	PU59913-473K	CAPACITOR	0.047μF,25V
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C41	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C42	PU59913-473K	CAPACITOR	0.047μF,25V
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C43	PU59913-473K	CAPACITOR	0.047μF,25V
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C44	PU59913-473K	CAPACITOR	0.047μF,25V
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C45	PU59913-473K	CAPACITOR	0.047μF,25V
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C46	PU59913-473K	CAPACITOR	0.047μF,25V
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C47	NEH10JM-226NZ	E CAPACITOR	22μF,6.3V
		or NEA20JM-226NZ	E CAPACITOR	22μF,6.3V
	C48	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C49	PU59913-473K	CAPACITOR	0.047μF,25V
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C50	PU59913-473K	CAPACITOR	0.047μF,25V
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C51	PU59913-473K	CAPACITOR	0.047μF,25V
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C52	PU59913-473K	CAPACITOR	0.047μF,25V
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C53	PU59913-473K	CAPACITOR	0.047μF,25V
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C54	PU59913-473K	CAPACITOR	0.047μF,25V
		or NCR21CK-473A	CAPACITOR	0.047μF,16V

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	C56	QCTA1CH-390	CAPACITOR	39pF,16V
	C57	NEH31CM-106NZ	E CAPACITOR	10μF,16V
		or NEA21CM-106NZ	E CAPACITOR	10μF,16V
	C58	QCTA1CH-101	CAPACITOR	100pF,16V
	C59	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C60	NEH10JM-226NZ	E CAPACITOR	22μF,6.3V
		or NEA20JM-226NZ	E CAPACITOR	22μF,6.3V
	C61	NEH31HM-225NZ	E CAPACITOR	2.2μF,50V
		or NEA21HM-225NZ	E CAPACITOR	2.2μF,50V
	C62	NEH31HM-225NZ	E CAPACITOR	2.2μF,50V
		or NEA21HM-225NZ	E CAPACITOR	2.2μF,50V
	C63	NEH31HM-225NZ	E CAPACITOR	2.2μF,50V
		or NEA21HM-225NZ	E CAPACITOR	2.2μF,50V
	C64	PU59913-473K	CAPACITOR	0.047μF,25V
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C65	PU59913-473K	CAPACITOR	0.047μF,25V
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C66	NEH31EM-475NZ	E CAPACITOR	4.7μF,25V
		or NEA21EM-475NZ	E CAPACITOR	4.7μF,25V
	C68	NEH10JM-226NZ	E CAPACITOR	22μF,6.3V
		or NEA20JM-226NZ	E CAPACITOR	22μF,6.3V
	C69	NEH10JM-226NZ	E CAPACITOR	22μF,6.3V
		or NEA20JM-226NZ	E CAPACITOR	22μF,6.3V
	C70	PU59913-473K	CAPACITOR	0.047μF,25V
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C71	QCF81CZ-105	CAPACITOR	1μF,16V
	C72	QCTA1CH-5R0	CAPACITOR	5RpF,16V
	C73	PU59913-473K	CAPACITOR	0.047μF,25V
	C74	QCTA1CH-101	CAPACITOR	100pF,16V
	C75	QCF81CZ-105	CAPACITOR	1μF,16V
	C76	QCF81CZ-105	CAPACITOR	1μF,16V
	C77	PU58948-104	CAPACITOR	0.1μF,25V
	C80	QCF81CZ-105	CAPACITOR	1μF,16V
	C202	QCTA1CH-300	CAPACITOR	30pF,16V
	C203	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C204	QCF81CZ-105	CAPACITOR	1μF,16V
	C207	QCTA1CH-270	CAPACITOR	27pF,16V
	C208	QCTA1CH-150	CAPACITOR	15pF,16V
	C209	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C210	QCF81CZ-105	CAPACITOR	1μF,16V
	C211	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C213	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C214	NEH10JM-226NZ	E CAPACITOR	22μF,6.3V
	C215	QCTA1CH-120	CAPACITOR	12pF,16V
	C216	QCTA1CH-220	CAPACITOR	22pF,16V
	L1	YU40740-220KY	COIL	22μH
		or YU41135-220KY	COIL	22μH
	L2	YU40740-220KY	COIL	22μH
		or YU41135-220KY	COIL	22μH
	L3	YU40740-220KY	COIL	22μH
		or YU41135-220KY	COIL	22μH
	L4	YU40740-220KY	COIL	22μH
		or YU41135-220KY	COIL	22μH
	L201	YU40740-390KY	COIL	39μH
		or YU40248-390KY	COIL	39μH
	L202	YU40740-220KY	COIL	22μH
		or YU41135-220KY	COIL	22μH

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION
	EQ1	YU40655	DELAY LINE
	BPF1	YU41264	FILTER
		or YU41269-Z	CHIP FILTER
		or YU41270-Z	CHIP FILTER
	DL1	YU41157	FILTER
	DL2	YU40637	EQUALIZER
	CF201	YU41160	CERAMIC OSC
⚠	CF202	YU40141	CRYSTAL RESONATOR
	SLD1	YU41339	SHIELD PLATE
	TP1	YU40581-AY	CHIP TP(2125)
	TP2	YU40581-AY	CHIP TP(2125)
	TP3	YU40581-AY	CHIP TP(2125)
	TP4	YU40581-AY	CHIP TP(2125)
	TP5	YU40581-AY	CHIP TP(2125)
	TP6	YU40581-AY	CHIP TP(2125)
	TP201	YU40581-AY	CHIP TP(2125)
	TP202	YU40581-AY	CHIP TP(2125)
	TP203	YU40581-AY	CHIP TP(2125)
	CN-V1	YU40663-20	CAP HOUSING,(BOARD TO BOARD)
	CN-V2	YU40663-12	CAP HOUSING,(BOARD TO BOARD)
	CN-V3	YU40663-14	CAP HOUSING,(BOARD TO BOARD)
	CN-V4	YU40663-14	CAP HOUSING,(BOARD TO BOARD)
	CN-V5	PU58655-3	CAP HOUSING
	CN-V6	YU40664-6	CAP HOUSING,(BOARD TO BOARD)

—FAW SUB BOARD ASSEMBLY—

REF. No.	PART No.	PART NAME, DESCRIPTION	
PWBA	YB20278A	FAW SUB BOARD ASSY	
IC1	UPC358G2	IC	
Q1	2SK880	FE TRANSISTOR	
D1	MA143	DIODE	
D2	MA143	DIODE	
D3	MA141WK	DIODE	
D4	MA141WK	DIODE	
R1	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R2	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
R3	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R4	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
R5	QRSA08J-103YN	RESISTOR	10kΩ,1/10W

—GATE BOARD ASSEMBLY—

REF. No.	PART No.	PART NAME, DESCRIPTION
PWBA	YB20214B	GATE BOARD ASSY
IC207	TC7S04F	IC

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION

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VIDEO BOARD ASSEMBLY <11>

(for EG model #1~1166)

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION
	PWBA	YB20220G1-02	VIDEO BOARD ASSY
	IC1	HA118025MP	IC
	IC2	UPC2371GH	IC
	IC3	BU4053BF	IC
	IC4	HA118118MA-XE	IC
	IC5	AN1393S	IC
	IC8	TC4S71F	IC
	IC20	YU41262	IC,SC MODULE
		or YU41263	IC,SC MODULE
	IC201	UPD75006GB-519	IC
	IC202	UPD6451GT-603	IC
	IC203	S-8052ANB-NE-X	IC
	IC204	S-8054HN-CB-X	IC
	IC205	TC7S00F	IC
	IC206	UPC358G2	IC
	Q1	2SA1532(BC)	TRANSISTOR
	Q2	2SC3936(BC)	TRANSISTOR
	Q3	2SC3936(BC)	TRANSISTOR
	Q4	2SC3936(BC)	TRANSISTOR
	Q8	2SC3936(BC)	TRANSISTOR
	Q9	2SC3936(BC)	TRANSISTOR
	Q10	2SC3936(BC)	TRANSISTOR
	Q13	2SA1532(BC)	TRANSISTOR
	Q16	2SC3936(BC)	TRANSISTOR
	Q17	2SC3936(BC)	TRANSISTOR
	Q19	2SC3936(BC)	TRANSISTOR
	Q20	2SC3936(BC)	TRANSISTOR
	Q21	2SC3936(BC)	TRANSISTOR
	Q22	2SC3936(BC)	TRANSISTOR
	Q24	2SC3936(BC)	TRANSISTOR
	Q25	2SC3936(BC)	TRANSISTOR
	Q26	DTC114EU	TRANSISTOR
	Q28	2SC3936(BC)	TRANSISTOR
	Q29	2SC3936(BC)	TRANSISTOR
	Q30	2SC3936(BC)	TRANSISTOR
	D1	MA141WK	DIODE
	D2	MA141WK	DIODE
	D3	MA141WK	DIODE
	D4	MA141WK	DIODE
	D5	MA141WK	DIODE
	D7	MA141WK	DIODE
	D8	MA141WK	DIODE
	D201	RB715F	DIODE
⚠	D202	RB715F	DIODE
	D203	RB451F	DIODE

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	R1	QRSA08J-182YN	RESISTOR	1.8kΩ,1/10W
	R2	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R3	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R4	NRVA62D-222N	RESISTOR	2.2kΩ,16W
	R5	NRVA62D-271N	RESISTOR	270Ω,16W
	R6	NRVA62D-181N	RESISTOR	180Ω,16W
	R7	NRVA62D-242N	RESISTOR	2.4kΩ,16W
	R8	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R9	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R10	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R11	QRSA08J-822YN	RESISTOR	8.2kΩ,1/10W
	R12	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R13	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R14	QRSA08J-392YN	RESISTOR	3.9kΩ,1/10W
	R15	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R16	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
	R17	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
	R18	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R19	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R20	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R21	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
	R22	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R23	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R32	NRVA62D-562N	RESISTOR	5.6kΩ,16W
	R33	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R35	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R36	QRSA08J-100YN	RESISTOR	10Ω,1/10W
	R37	NVP1302-102N	V RESISTOR,COLOR LEVEL	1kΩ
	R38	QRSA08J-471YN	RESISTOR	470Ω,1/10W
	R39	NVP1302-103N	V RESISTOR,BURST PHASE	10kΩ
	R40	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R41	QRSA08J-121YN	RESISTOR	120Ω,1/10W
	R42	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R43	NVP1302-472N	V RESISTOR,BURST LEVEL	4.7kΩ
	R44	NRVA62D-332N	RESISTOR	3.3kΩ,16W
	R45	NRVA62D-623N	RESISTOR	62kΩ,16W
	R46	NRVA62D-182N	RESISTOR	1.8kΩ,16W
	R47	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
	R48	NVP1302-153N	V RESISTOR,B SET UP	15kΩ
	R49	NVP1302-153N	V RESISTOR,R SET UP	15kΩ
	R50	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R59	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R60	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R62	QRD161J-223	RESISTOR	22kΩ,1/6W
	R64	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R65	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R66	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R67	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R68	NVP1302-103N	V RESISTOR,R ENCODER BAL	10kΩ
	R69	NVP1302-103N	V RESISTOR,B ENCODER BAL	10kΩ
	R70	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R71	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
	R72	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R73	NVP1302-103N	V RESISTOR,B-Y LEVEL	10kΩ
	R74	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R75	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R76	NVP1302-103N	V RESISTOR,COLOR DIF OFFSET	10kΩ

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	R77	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R78	QRSA08J-123YN	RESISTOR	12kΩ,1/10W
	R79	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
	R80	QRSA08J-393YN	RESISTOR	39kΩ,1/10W
	R81	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R82	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
	R83	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
	R84	QRSA08J-303YN	RESISTOR	30kΩ,1/10W
	R85	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
	R86	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R87	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R88	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R89	QRSA08J-392YN	RESISTOR	3.9kΩ,1/10W
	R90	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R91	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R94	NRVA62D-332N	RESISTOR	3.3kΩ,16W
	R95	NRVA62D-822N	RESISTOR	8.2kΩ,16W
	R96	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
	R97	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R98	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R99	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R100	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R101	NRVA62D-393N	RESISTOR	39kΩ,16W
	R102	NRVA62D-303N	RESISTOR	30kΩ,16W
	R103	NRVA62D-243N	RESISTOR	24kΩ,16W
	R104	NRVA62D-243N	RESISTOR	24kΩ,16W
	R105	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R106	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R107	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R108	QRSA08J-563YN	RESISTOR	56kΩ,1/10W
	R109	QRSA08J-563YN	RESISTOR	56kΩ,1/10W
	R110	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
	R111	QRSA08J-243YN	RESISTOR	24kΩ,1/10W
	R112	NRVA62D-223N	RESISTOR	22kΩ,16W
	R113	NRVA62D-223N	RESISTOR	22kΩ,16W
	R114	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R115	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R116	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
	R117	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
	R118	QRSA08J-334YN	RESISTOR	330kΩ,1/10W
	R119	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
	R120	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R121	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R122	NRVA62D-223N	RESISTOR	22kΩ,16W
	R123	NRVA62D-273N	RESISTOR	27kΩ,16W
	R125	NRVA62D-103N	RESISTOR	10kΩ,16W
	R126	NRVA62D-103N	RESISTOR	10kΩ,16W
	R128	NRVA62D-243N	RESISTOR	24kΩ,16W
	R129	NRVA62D-223N	RESISTOR	22kΩ,16W
	R130	NRVA62D-273N	RESISTOR	27kΩ,16W
	R131	NRVA62D-243N	RESISTOR	24kΩ,16W
	R133	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R134	QRSA08J-153YN	RESISTOR	15kΩ,1/10W

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	R135	NVP1302-473N	V RESISTOR,B LEVEL	47kΩ
	R136	QRSA08J-393YN	RESISTOR	39kΩ,1/10W
	R137	QRSA08J-273YN	RESISTOR	27kΩ,1/10W
	R138	NVP1302-473N	V RESISTOR,R LEVEL	47kΩ
	R139	QRSA08J-273YN	RESISTOR	27kΩ,1/10W
	R140	NVP1302-225N	V RESISTOR,R AW OFFSET	2.2MΩ
	R141	NVP1302-225N	V RESISTOR,B AW OFFSET	2.2MΩ
	R142	QRSA08J-393YN	RESISTOR	39kΩ,1/10W
	R143	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R147	NRVA62D-473N	RESISTOR	47kΩ,16W
	R148	NRVA62D-683N	RESISTOR	68kΩ,16W
	R149	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R150	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R151	QRSA08J-123YN	RESISTOR	12kΩ,1/10W
	R152	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R155	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R156	QRSA08J-912YN	RESISTOR	9.1kΩ,1/10W
	R157	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R158	QRSA08J-101YN	RESISTOR	100Ω,1/10W
	R159	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
	R161	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
	R162	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
	R163	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
	R164	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R165	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R166	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R167	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
	R168	QRSA08J-822YN	RESISTOR	8.2kΩ,1/10W
	R169	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R170	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R172	NRVA62D-182N	RESISTOR	1.8kΩ,16W
	R173	NRVA62D-222N	RESISTOR	2.2kΩ,16W
	R174	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R175	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R176	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R177	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R178	NRVA62D-391N	RESISTOR	390Ω,16W
	R179	NRVA62D-363N	RESISTOR	36kΩ,16W
	R180	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R181	QRSA08J-100YN	RESISTOR	10Ω,1/10W
	R182	QRSA08J-123YN	RESISTOR	12kΩ,1/10W
	R183	QRSA08J-123YN	RESISTOR	12kΩ,1/10W
	R184	QRSA08J-182YN	RESISTOR	1.8kΩ,1/10W
⚠	R201	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R202	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
	R203	NRVA62D-393N	RESISTOR	39kΩ,16W
	R204	NRVA62D-393N	RESISTOR	39kΩ,16W
	R205	NRVA62D-682N	RESISTOR	6.8kΩ,16W
	R206	QRSA08J-225YN	RESISTOR	2.2MΩ,1/10W
	R207	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
	R208	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R209	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R210	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R211	QRSA08J-103YN	RESISTOR	10kΩ,1/10W

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	R212	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R213	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R214	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R215	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R216	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R217	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R218	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R219	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R220	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R221	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R224	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R225	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R226	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R228	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R229	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R230	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R231	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R232	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R233	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R234	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R235	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R236	QRSA08J-224YN	RESISTOR	220kΩ,1/10W
	R237	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R238	QRSA08J-101YN	RESISTOR	100Ω,1/10W
	R240	QRSA08J-185Y	RESISTOR	1.8MΩ,1/10W
	R289	QRSA08J-101YN	RESISTOR	100Ω,1/10W
	C1	NEH10JM-226NZ	E CAPACITOR	22µF,6.3V
		or NEA20JM-226NZ	E CAPACITOR	22µF,6.3V
	C2	QCFA1EZ-104	CAPACITOR	0.1µF,25V
	C3	QCFA1EZ-104	CAPACITOR	0.1µF,25V
	C4	QCFA1EZ-104	CAPACITOR	0.1µF,25V
	C5	QCFA1EZ-104	CAPACITOR	0.1µF,25V
	C6	QCFA1EZ-104	CAPACITOR	0.1µF,25V
	C7	PU59913-473K	CAPACITOR	0.047µF
		or NCR21CK-473A	CAPACITOR	0.047µF,16V
	C8	NEH31CM-106NZ	E CAPACITOR	10µF,16V
		or NEA21CM-106NZ	E CAPACITOR	10µF,16V
	C9	NEH31CM-106NZ	E CAPACITOR	10µF,16V
		or NEA21CM-106NZ	E CAPACITOR	10µF,16V
	C10	PU59913-473K	CAPACITOR	0.047µF
		or NCR21CK-473A	CAPACITOR	0.047µF,16V
	C11	PU59913-473K	CAPACITOR	0.047µF
		or NCR21CK-473A	CAPACITOR	0.047µF,16V
	C12	NEH31CM-106NZ	E CAPACITOR	10µF,16V
		or NEA21CM-106NZ	E CAPACITOR	10µF,16V
	C13	NEH31CM-106NZ	E CAPACITOR	10µF,16V
		or NEA21CM-106NZ	E CAPACITOR	10µF,16V
	C14	PU59913-473K	CAPACITOR	0.047µF
		or NCR21CK-473A	CAPACITOR	0.047µF,16V
	C15	QCTA1CH-220	CAPACITOR	22pF,16V
	C16	NEH10JM-226NZ	E CAPACITOR	22µF,6.3V
		or NEA20JM-226NZ	E CAPACITOR	22µF,6.3V
	C17	QCYA1EK-104Z	CAPACITOR	0.1µF,25V
	C18	QCF81CZ-105	CAPACITOR	1µF,16V
	C19	QCYA1HK-103	CAPACITOR	0.01µF,50V
	C20	QCYA1HK-103	CAPACITOR	0.01µF,50V
	C21	QCYA1HK-103	CAPACITOR	0.01µF,50V

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	C22	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C23	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C24	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C25	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C26	QCTA1CH-150	CAPACITOR	15pF,16V
	C27	PU59913-473K	CAPACITOR	0.047μF
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C28	PU59913-473K	CAPACITOR	0.047μF
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C31	NEH10JM-226NZ	E CAPACITOR	22μF,6.3V
		or NEA20JM-226NZ	E CAPACITOR	22μF,6.3V
	C32	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C33	NEH10JM-226NZ	E CAPACITOR	22μF,6.3V
		or NEA20JM-226NZ	E CAPACITOR	22μF,6.3V
	C35	PU58948-104	CAPACITOR	
	C34	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C36	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C37	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C38	PU59913-473K	CAPACITOR	0.047μF
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C39	NEH10GM-336NZ	E CAPACITOR	33μF,4V
	C40	PU59913-473K	CAPACITOR	0.047μF
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C41	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C42	PU59913-473K	CAPACITOR	0.047μF
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C43	PU59913-473K	CAPACITOR	0.047μF
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C44	PU59913-473K	CAPACITOR	0.047μF
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C45	PU59913-473K	CAPACITOR	0.047μF
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C46	PU59913-473K	CAPACITOR	0.047μF
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C47	NEH10JM-226NZ	E CAPACITOR	22μF,6.3V
		or NEA20JM-226NZ	E CAPACITOR	22μF,6.3V
	C48	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C49	PU59913-473K	CAPACITOR	0.047μF
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C50	PU59913-473K	CAPACITOR	0.047μF
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C51	PU59913-473K	CAPACITOR	0.047μF
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C52	PU59913-473K	CAPACITOR	0.047μF
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C53	PU59913-473K	CAPACITOR	0.047μF
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C54	PU59913-473K	CAPACITOR	0.047μF
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C56	QCTA1CH-390	CAPACITOR	39pF,16V
	C57	NEH31CM-106NZ	E CAPACITOR	10μF,16V
		or NEA21CM-106NZ	E CAPACITOR	10μF,16V
	C58	QCTA1CH-101	CAPACITOR	100pF,16V
	C59	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C60	NEH10JM-226NZ	E CAPACITOR	22μF,6.3V
		or NEA20JM-226NZ	E CAPACITOR	22μF,6.3V
	C61	NEH31HM-225NZ	E CAPACITOR	2.2μF,50V
		or NEA21HM-225NZ	E CAPACITOR	2.2μF,50V

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	C62	NEH31HM-225NZ	E CAPACITOR	2.2μF,50V
		or NEA21HM-225NZ	E CAPACITOR	2.2μF,50V
	C63	NEH31HM-225NZ	E CAPACITOR	2.2μF,50V
		or NEA21HM-225NZ	E CAPACITOR	2.2μF,50V
	C64	PU59913-473K	CAPACITOR	0.047μF
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C65	PU59913-473K	CAPACITOR	0.047μF
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C66	NEH31EM-475NZ	E CAPACITOR	4.7μF,25V
		or NEA21EM-475NZ	E CAPACITOR	4.7μF,25V
	C68	NEH10JM-226NZ	E CAPACITOR	22μF,6.3V
		or NEA20JM-226NZ	E CAPACITOR	22μF,6.3V
	C69	NEH10JM-226NZ	E CAPACITOR	22μF,6.3V
		or NEA20JM-226NZ	E CAPACITOR	22μF,6.3V
	C70	PU59913-473K	CAPACITOR	0.047μF
		or NCR21CK-473A	CAPACITOR	0.047μF,16V
	C71	QCF81CZ-105	CAPACITOR	1μF,16V
	C72	QCTA1CH-5R0	CAPACITOR	5pF,16V
	C202	QCTA1CH-300	CAPACITOR	30pF,16V
	C203	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C204	QCF81CZ-105	CAPACITOR	1μF,16V
	C207	QCTA1CH-270	CAPACITOR	27pF,16V
	C208	QCTA1CH-150	CAPACITOR	15pF,16V
	C209	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C210	QCF81CZ-105	CAPACITOR	1μF,16V
	C211	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C213	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C214	NEH10JM-226NZ	E CAPACITOR	22μF,6.3V
	C215	QCTA1CH-120	CAPACITOR	12pF,16V
	C216	QCS11HJ-220	CAPACITOR	22pF,50V
	L1	YU40740-101KY	COIL	100μH
		or YU41135-101KY	COIL	100μH
	L2	YU40740-220KY	COIL	22μH
		or YU41135-220KY	COIL	22μH
	L3	YU40740-220KY	COIL	22μH
		or YU41135-220KY	COIL	22μH
	L4	YU40740-220KY	COIL	22μH
		or YU41135-220KY	COIL	22μH
	L201	YU40740-390KY	COIL	39μH
		or YU40248-390KY	COIL	39μH
		or YU40740-220KY	COIL	22μH
		or YU41135-220KY	COIL	22μH
	EQ1	YU40655	DELAY LINE	
	BPF1	YU41264	CHIP FILTER	
		or YU41270-Z	CHIP FILTER	
		or YU41269-Z	CHIP FILTER	
	CF201	YU41160	CERAMIC OSC	
⚠	CF202	YU40141	CRYSTAL RESONATOR	
	SLD1	YU41339	SHIELD PLATE	
	TP1	YU40581-AY	CHIP TP(2125)	
	TP2	YU40581-AY	CHIP TP(2125)	
	TP3	YU40581-AY	CHIP TP(2125)	

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	TP4	YU40581-AY	CHIP TP(2125)	
	TP5	YU40581-AY	CHIP TP(2125)	
	TP6	YU40581-AY	CHIP TP(2125)	
	TP201	YU40581-AY	CHIP TP(2125)	
	TP202	YU40581-AY	CHIP TP(2125)	
	TP203	YU40581-AY	CHIP TP(2125)	
	CN-V1	YU40663-20	CAP HOUSING,(BOARD TO BOARD)	
	CN-V2	YU40663-12	CAP HOUSING,(BOARD TO BOARD)	
	CN-V3	YU40663-14	CAP HOUSING,(BOARD TO BOARD)	
	CN-V4	YU40663-14	CAP HOUSING,(BOARD TO BOARD)	
	CN-V5	PU58655-3	CAP HOUSING	
	CN-V6	YU40664-6	CAP HOUSING,(BOARD TO BOARD)	

— VIDEO SUB BOARD ASSEMBLY —

REF. No.	PART No.	PART NAME, DESCRIPTION	
PWBA	YB20250E-C	VIDEO SUB BOARD ASSY	
Q1	2SA1532(BC)	TRANSISTOR	
Q2	2SC3936(BC)	TRANSISTOR	
Q3	2SC3936(BC)	TRANSISTOR	
Q4	2SC3936(BC)	TRANSISTOR	
Q5	2SC3936(BC)	TRANSISTOR	
Q6	2SC3936(BC)	TRANSISTOR	
Q7	2SC3936(BC)	TRANSISTOR	
Q8	2SC3936(BC)	TRANSISTOR	
Q9	2SC3936(BC)	TRANSISTOR	
Q10	2SC3936(BC)	TRANSISTOR	
R1	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R2	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R3	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
R4	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
R5	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
R6	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
R7	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
R8	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
R9	QRSA08J-182YN	RESISTOR	1.8kΩ,1/10W
R10	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
R11	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R12	QRSA08J-182YN	RESISTOR	1.8kΩ,1/10W
R13	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
R14	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
R15	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R16	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
R17	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
R18	QRSA08J-392YN	RESISTOR	3.9kΩ,1/10W
R19	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
R20	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R21	QRSA08J-272YN	RESISTOR	2.7kΩ,1/10W
R22	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
C1	QCFA1EZ-104	CAPACITOR	0.1μF,25V
C2	PU59913-473K	CAPACITOR	0.047μF
C3	QCF81CZ-105	CAPACITOR	1μF,16V
C4	QCF81CZ-105	CAPACITOR	1μF,16V
C5	QCF81CZ-105	CAPACITOR	1μF,16V
C6	QCYA1HK-103	CAPACITOR	0.01μF,50V
LPF1	YU41301-Z	LOW PASS FILTER	

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION
	DL1	YU41157	CHIP FILTER
	DL2	YU40637-P	EQUALIZER

—FAW SUB BOARD—

REF. No.	PART No.	PART NAME, DESCRIPTION	
PWBA	YB20278A	FAW SUB BOARD ASSY	
IC1	UPC358G2	IC	
Q1	2SK880	FE TRANSISTOR	
D1	MA143	DIODE	
D2	MA143	DIODE	
D3	MA141WK	DIODE	
D4	MA141WK	DIODE	
R1	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
R2	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
R3	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
R4	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
R5	QRSA08J-103YN	RESISTOR	10kΩ,1/10W

—SC BOARD—

REF. No.	PART No.	PART NAME, DESCRIPTION	
PWBA	YB2058E	SC BOARD ASSY	
Q1	2SC3936(BC)	TRANSISTOR	
Q2	2SC3936(BC)	TRANSISTOR	
R1	QRSA08J-682YN	RESISTOR	680Ω,1/10W
R2	QRSA08J-182YN	RESISTOR	18kΩ,1/10W
R3	QRSA08J-182YN	RESISTOR	18kΩ,1/10W
R4	QRSA08J-681YN	RESISTOR	680Ω,1/10W
R5	QRSA08J-682YN	RESISTOR	68kΩ,1/10W
R6	QRSA08J-182YN	RESISTOR	18kΩ,1/10W
R7	QRSA08J-182YN	RESISTOR	18kΩ,1/10W
R8	QRSA08J-681YN	RESISTOR	680Ω,1/10W
C1	QCTA1CH-330Z	CAPACITOR	33pF,16V
C2	QCTA1CH-101Z	CAPACITOR	100pF,16V
C3	QCTA1CH-330Z	CAPACITOR	33pF,16V
C4	QCFA1EZ-104Z	CAPACITOR	0.1μF,25V

—GATE BOARD—

REF. No.	PART No.	PART NAME, DESCRIPTION
PWBA	YB20214B	GATE BOARD ASSY
IC207	TC7S04F	IC

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SSG BOARD ASSEMBLY <12>
(for EK model and EG model #1167～)

REF. No.	PART No.	PART NAME, DESCRIPTION
PWBA	YB20286G2 or YB20220G2-03	SSG BOARD ASSY
IC302	UPD6147G	IC
IC303	TC6025AF	IC
IC304	TA8713BF	IC
IC306	MSM6845MS	IC
IC307	MSM6865MS	IC

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	Q301	2SD1819(RS)	TRANSISTOR	
	Q302	2SC3936(BC)	TRANSISTOR	
	Q303	2SC3936(BC)	TRANSISTOR	
	Q304	2SC3936(BC)	TRANSISTOR	
	Q305	2SA1532(BC)	TRANSISTOR	
	Q306	2SC3936(BC)	TRANSISTOR	
	Q307	2SC3936(BC)	TRANSISTOR	
	Q308	2SA1532(BC)	TRANSISTOR	
	Q309	2SC3936(BC)	TRANSISTOR	
	Q310	2SA1532(BC)	TRANSISTOR	
	Q311	2SA1532(BC)	TRANSISTOR	
	Q312	2SC3936(BC)	TRANSISTOR	
	D301	MA141WK	DIODE	
	R301	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
	R302	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R303	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R304	QRSA08J-563YN	RESISTOR	56kΩ,1/10W
	R305	QRSA08J-124YN	RESISTOR	120kΩ,1/10W
	R306	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R307	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
	R308	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R309	QRSA08J-100YN	RESISTOR	10Ω,1/10W
	R310	QRSA08J-100YN	RESISTOR	10Ω,1/10W
	R311	QRSA08J-101YN	RESISTOR	100Ω,1/10W
	R312	QRSA08J-101YN	RESISTOR	100Ω,1/10W
	R313	QRSA08J-101YN	RESISTOR	100Ω,1/10W
	R314	QRSA08J-101YN	RESISTOR	100Ω,1/10W
	R315	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R316	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R318	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R319	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R320	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R322	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R323	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R324	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
	R325	QRSA08J-101YN	RESISTOR	100Ω,1/10W
	R326	QRSA08J-101YN	RESISTOR	100Ω,1/10W
	R327	QRSA08J-101YN	RESISTOR	100Ω,1/10W
	R330	NRVA62D-472N	RESISTOR	4.7kΩ,1/16W
	R331	NRVA62D-103N	RESISTOR	10kΩ,1/16W
	R332	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
	R333	NRVA62D-162N	RESISTOR	1.6kΩ,1/16W
	R334	NRVA62D-393N	RESISTOR	39kΩ,1/16W
	R335	NRVA62D-513N	RESISTOR	51kΩ,1/16W
	R336	NRVA62D-102N	RESISTOR	1kΩ,1/16W
	R337	NRVA62D-102N	RESISTOR	1kΩ,1/16W
	R338	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
	R339	NRVA62D-123N	RESISTOR	12kΩ,1/16W
	R340	NRVA62D-682N	RESISTOR	6.8kΩ,1/16W
	R341	NRVA62D-822N	RESISTOR	8.2kΩ,1/16W
	R342	NRVA62D-682N	RESISTOR	6.8kΩ,1/16W
	R343	NVP1302-103N	V RESISTOR,R/B SEPA	10kΩ
	R345	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R346	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R347	NVP1302-103N	V RESISTOR,CD BALANCE	10kΩ
	R348	QRSA08J-102YN	RESISTOR	1kΩ,1/10W

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	R349	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R350	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R351	NVP1302-103N	V RESISTOR,CNR BAL	10kΩ
	R352	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R353	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R354	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R355	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R356	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R357	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R358	NVP1302-103N	V RESISTOR,1H DELAYED SIG LEVL	10kΩ
	R361	QRSA08J-182YN	RESISTOR	1.8kΩ,1/10W
	R362	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R371	QRSA08J-471YN	RESISTOR	470Ω,1/10W
	R380	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R381	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	C301	NEA21CM-106NZ	E CAPACITOR	10μF,16V
	or	NEH31CM-106NZ	E CAPACITOR	10μF,16V
	C302	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C303	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C304	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C305	NEA20JM-226NZ	E CAPACITOR	22μF,6.3V
	or	NEH30JM-226NZ	CAPACITOR	22μF,6.3V
	C306	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C307	NEA21CM-106NZ	E CAPACITOR	10μF,16V
	or	NEH31CM-106NZ	E CAPACITOR	10μF,16V
	C308	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C309	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C310	NEA21CM-476NP	E CAPACITOR	47μF,16V
	C311	QEF81CM-105	TANTAL CAPACITOR	1μF,16V
	C312	QCTA1CH-330	CAPACITOR	33pF,16V
	C313	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C314	YU40265-2	E CAPACITOR	120μF,16V
	C315	QCTA1CH-120	CAPACITOR	12pF,16V
	C316	QCTA1CH-120	CAPACITOR	12pF,16V
	C317	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C318	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C319	NEA20JM-226NZ	E CAPACITOR	22μF,6.3V
	or	NEH30JM-226NZ	CAPACITOR	22μF,6.3V
	C320	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C321	NEA20JM-226NZ	E CAPACITOR	22μF,6.3V
	or	NEH30JM-226NZ	CAPACITOR	22μF,6.3V
	C322	QCTA1CH-560	CAPACITOR	56pF,16V
	C323	QCTA1CH-560	CAPACITOR	56pF,16V
	C324	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C325	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C326	QCTA1CH-331	CAPACITOR	330pF,16V
	C327	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C328	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C329	NEA20JM-107NP	E CAPACITOR	100μF,6.3V
	C330	QCTA1CH-121	CAPACITOR	120pF,16V
	C331	QCTA1CH-121	CAPACITOR	120pF,16V
	C333	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C334	QCF81CZ-105	CAPACITOR	1μF,16V
	C335	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C336	QCFA1EZ-104	CAPACITOR	0.1μF,25V

⚠ REF. No.	PART No.	PART NAME, DESCRIPTION	
C337	QCYA1EK-104	CAPACITOR	0.1μF,25V
C338	QCFA1EZ-104	CAPACITOR	0.1μF,25V
C339	YU40265-1	E CAPACITOR	560μF,10V
C340	QCYA1EK-104	CAPACITOR	0.1μF,25V
C341	QETA1CM-476	E CAPACITOR	47μF,16V
C342	QCFA1EZ-104	CAPACITOR	0.1μF,25V
C343	NEA20JM-226NZ	E CAPACITOR	22μF,6.3V
	or NEH30JM-226NZ	CAPACITOR	22μF,6.3V
C344	QCFA1EZ-104	CAPACITOR	0.1μF,25V
C345	NEA21HM-225NZ	E CAPACITOR	2.2μF,50V
	or NEH31HM-225NZ	E CAPACITOR	2.2μF,50V
C346	QCYA1HK-103	CAPACITOR	0.01μF,50V
C347	QCYA1HK-103	CAPACITOR	0.01μF,50V
C348	NEA21HM-225NZ	E CAPACITOR	2.2μF,50V
	or NEH31HM-225NZ	E CAPACITOR	2.2μF,50V
C349	QCFA1EZ-104	CAPACITOR	0.1μF,25V
C350	NEA20JM-226NZ	E CAPACITOR	22μF,6.3V
	or NEH30JM-226NZ	CAPACITOR	22μF,6.3V
C351	QCYA1EK-104	CAPACITOR	0.1μF,25V
C352	QCFA1EZ-104	CAPACITOR	0.1μF,25V
C353	YU40265-2	E CAPACITOR	120μF,16V
C354	QCYA1EK-104	CAPACITOR	0.1μF,25V
C355	QCYA1HK-103	CAPACITOR	0.01μF,50V
C356	QCYA1HK-103	CAPACITOR	0.01μF,50V
C357	QCF81CZ-105	CAPACITOR	1μF,16V
C358	NEA21HM-225NZ	E CAPACITOR	2.2μF,50V
	or NEH31HM-225NZ	E CAPACITOR	2.2μF,50V
C359	QCFA1EZ-104	CAPACITOR	0.1μF,25V
C360	NEA21CM-106NZ	E CAPACITOR	10μF,16V
	or NEH31CM-106NZ	E CAPACITOR	10μF,16V
L301	YU40740-220KY	COIL	22μH
L302	YU40740-101KY	COIL	100μH
L303	YU40740-101KY	COIL	100μH
L304	YU40740-101KY	COIL	100μH
L305	YU40740-101KY	COIL	100μH
L306	YU40740-220KY	COIL	22μH
L307	YU40740-101KY	COIL	100μH
L308	YU40740-221KY	COIL	220μH
L309	YU40740-220KY	COIL	22μH
L310	YU40740-220KY	COIL	22μH
L311	YU40740-220KY	COIL	22μH
L312	YU40740-220KY	COIL	22μH
LPF301	YU41148-2	FILTER	
LPF302	YU41267	FILTER	
LPF303	YU41268	FILTER	
	or YU41313-Z	LOW PASS FILTER	
LPF304	YU41268	FILTER	
	or YU41313-Z	LOW PASS FILTER	
X301	YU41266	CRYSTAL RESONATOR,XT1	
CN-S301	YU40663-6	CAP HOUSING	
CN-S302	YU40664-8	CAP HOUSING	
CN-S303	YU40669-14	CAP HOUSING	
CN-S304	YU40669-14	CAP HOUSING	
CN-S305	YU40662-R	CCD SOCKET	

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SSG BOARD ASSEMBLY <12>

(for EG model #1~1166)

⚠ REF. No.	PART No.	PART NAME, DESCRIPTION	
PWBA	YB20220G2-02	SSG BOARD ASSY	
IC302	TC9224F	IC	
IC303	TC6025AF	IC	
IC304	TA8713BF	IC	
IC306	MSM6845MS	IC	
IC307	MSM6865MS	IC	
Q301	2SD1819(RS)	TRANSISTOR	
Q302	2SC3936(BC)	TRANSISTOR	
Q303	2SC3936(BC)	TRANSISTOR	
Q304	2SC3936(BC)	TRANSISTOR	
Q305	2SA1532(BC)	TRANSISTOR	
Q306	2SC3936(BC)	TRANSISTOR	
Q307	2SC3936(BC)	TRANSISTOR	
Q308	2SA1532(BC)	TRANSISTOR	
Q309	2SC3936(BC)	TRANSISTOR	
Q310	2SA1532(BC)	TRANSISTOR	
Q311	2SA1532(BC)	TRANSISTOR	
Q312	2SC3936(BC)	TRANSISTOR	
D301	MA141WK	DIODE	
R301	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
R302	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
R303	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R304	QRSA08J-563YN	RESISTOR	56kΩ,1/10W
R305	QRSA08J-124YN	RESISTOR	120kΩ,1/10W
R306	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R307	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
R308	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R309	QRSA08J-100YN	RESISTOR	10Ω,1/10W
R310	QRSA08J-100YN	RESISTOR	10Ω,1/10W
R311	QRSA08J-101YN	RESISTOR	100Ω,1/10W
R312	QRSA08J-101YN	RESISTOR	100Ω,1/10W
R313	QRSA08J-101YN	RESISTOR	100Ω,1/10W
R314	QRSA08J-101YN	RESISTOR	100Ω,1/10W
R315	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R316	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R318	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R319	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
R320	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R321	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
R322	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R323	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
R324	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
R325	QRSA08J-101YN	RESISTOR	100Ω,1/10W
R326	QRSA08J-101YN	RESISTOR	100Ω,1/10W
R327	QRSA08J-101YN	RESISTOR	100Ω,1/10W
R330	NRVA62D-562N	RESISTOR	5.6kΩ,16W
R331	NRVA62D-103N	RESISTOR	10kΩ,16W

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	R332	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
	R333	NRVA62D-163N	RESISTOR	16kΩ,16W
	R334	NRVA62D-393N	RESISTOR	39kΩ,16W
	R335	NRVA62D-513N	RESISTOR	51kΩ,16W
	R336	NRVA62D-102N	RESISTOR	1kΩ,16W
	R337	NRVA62D-102N	RESISTOR	1kΩ,16W
	R338	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
	R339	NRVA62D-123N	RESISTOR	12kΩ,16W
	R340	NRVA62D-682N	RESISTOR	6.8kΩ,16W
	R341	NRVA62D-822N	RESISTOR	8.2kΩ,16W
	R342	NRVA62D-682N	RESISTOR	6.8kΩ,16W
	R343	NVP1302-103N	V RESISTOR,R/B SEPA	10kΩ
	R344	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R345	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R346	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R347	NVP1302-103N	V RESISTOR,CD BALANCE	10kΩ
	R348	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R349	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R350	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R351	NVP1302-103N	V RESISTOR,CNR BAL	10kΩ
	R352	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R353	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R354	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R355	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R356	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R357	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R358	NVP1302-103N	V RESISTOR,1H DELAYED SIG LEVL	10kΩ
	R371	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R380	QRD161J-471	RESISTOR	470Ω,1/6W
	C301	NEA21CM-106NZ	E CAPACITOR	10μF,16V
	or	NEH31CM-106NZ	E CAPACITOR	10μF,16V
	C302	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C303	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C304	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C305	NEA20JM-226NZ	E CAPACITOR	22μF,6.3V
	or	NEH30JM-226NZ	CAPACITOR	22μF,6.3V
	C306	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C307	NEA21CM-106NZ	E CAPACITOR	10μF,16V
	or	NEH31CM-106NZ	E CAPACITOR	10μF,16V
	C308	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C309	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C310	NEA21CM-476NP	E CAPACITOR	47μF,16V
	C311	QEF81CM-105	TANTAL CAPACITOR	1μF,16V
	C312	QCTA1CH-330	CAPACITOR	33pF,16V
	C313	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C314	NEA20JM-226NZ	E CAPACITOR	22μF,6.3V
	or	NEH30JM-226NZ	CAPACITOR	22μF,6.3V
	C315	QCTA1CH-120	CAPACITOR	12pF,16V
	C316	QCTA1CH-120	CAPACITOR	12pF,16V
	C317	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C318	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C319	NEA20JM-226NZ	E CAPACITOR	22μF,6.3V
	or	NEH30JM-226NZ	CAPACITOR	22μF,6.3V
	C320	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C321	NEA20JM-226NZ	E CAPACITOR	22μF,6.3V
	or	NEH30JM-226NZ	CAPACITOR	22μF,6.3V

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	C322	QCTA1CH-560	CAPACITOR	56pF,16
	C323	QCTA1CH-560	CAPACITOR	56pF,16
	C324	QCFA1EZ-104	CAPACITOR	0.1μF,25
	C325	QCFA1EZ-104	CAPACITOR	0.1μF,25
	C326	QCTA1CH-331	CAPACITOR	330pF,16
	C327	QCFA1EZ-104	CAPACITOR	0.1μF,25
	C328	QCFA1EZ-104	CAPACITOR	0.1μF,25
	C329	NEA20JM-107NP	E CAPACITOR	100μF,6.3
	C333	QCFA1EZ-104	CAPACITOR	0.1μF,25
	C334	QCF81CZ-105	CAPACITOR	1μF,16
	C335	QCFA1EZ-104	CAPACITOR	0.1μF,25
	C336	QCFA1EZ-104	CAPACITOR	0.1μF,25
	C337	QCYA1EK-104	CAPACITOR	0.1μF,25
	C338	QCFA1EZ-104	CAPACITOR	0.1μF,25
	C339	NEA20JM-107NP	E CAPACITOR	100μF,6.3
	C340	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C342	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C343	NEA20JM-226NZ	E CAPACITOR	22μF,6.3V
	or	NEH30JM-226NZ	CAPACITOR	22μF,6.3V
	C344	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C345	NEA21HM-225NZ	E CAPACITOR	2.2μF,50V
	or	NEH31HM-225NZ	E CAPACITOR	2.2μF,50V
	C346	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C347	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C348	NEA21HM-225NZ	E CAPACITOR	2.2μF,50V
	or	NEH31HM-225NZ	E CAPACITOR	2.2μF,50V
	C349	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C350	NEA20JM-226NZ	E CAPACITOR	22μF,6.3V
	or	NEH30JM-226NZ	CAPACITOR	22μF,6.3V
	C351	QCYA1EK-104	CAPACITOR	0.1μF,25
	C352	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C353	NEA21CM-106NZ	E CAPACITOR	10μF,16V
	or	NEH31CM-106NZ	E CAPACITOR	10μF,16V
	C354	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C355	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C356	QCYA1HK-103	CAPACITOR	0.01μF,50V
	C357	QCF81CZ-105	CAPACITOR	1μF,16V
	C358	NEA21HM-225NZ	E CAPACITOR	2.2μF,50V
	or	NEH31HM-225NZ	E CAPACITOR	2.2μF,50V
	C359	QCFA1EZ-104	CAPACITOR	0.1μF,25V
	C360	NEA21CM-106NZ	E CAPACITOR	10μF,16V
	or	NEH31CM-106NZ	E CAPACITOR	10μF,16V
	L301	YU40740-220KY	COIL	22μH
	L302	YU40740-101KY	COIL	100μH
	L303	YU40740-101KY	COIL	100μH
	L304	YU40740-101KY	COIL	100μH
	L305	YU40740-101KY	COIL	100μH
	L306	YU40740-220KY	COIL	22μH
	L307	YU40740-101KY	COIL	100μH
	L308	YU40740-221KY	COIL	220μH
	L309	YU40740-220KY	COIL	22μH
	L310	YU40740-220KY	COIL	22μH
	L311	YU40740-220KY	COIL	22μH
	L312	YU40740-220KY	COIL	22μH
	LPF301	YU41148-2	FILTER	
	LPF302	YU41267-Z	FILTER	

⚠ REF. No.	PART No.	PART NAME, DESCRIPTION	
LPF303	YU41268	FILTER	
	or YU41313-Z	LOW PASS FILTER	
LPF304	YU41268	FILTER	
	or YU41313-Z	LOW PASS FILTER	
X301	YU41266	CRYSTAL RESONATOR,XT1	
CN-S301	YU40663-6	CAP HOUSING	
CN-S302	YU40664-8	CAP HOUSING	
CN-S303	YU40669-14	CAP HOUSING	
CN-S304	YU40669-14	CAP HOUSING	
CN-S305	YU40662-R	CCD SOCKET	

— ATT BOARD ASSEMBLY —

⚠ REF. No.	PART No.	PART NAME, DESCRIPTION	
PWBA	YB20260A-C	ATT BOARD ASSY	
C2	QCTA1CH-121	CAPACITOR	120pF,16V
C3	QCTA1CH-121	CAPACITOR	120pF,16V
L1	YU40740-220KY	COIL	22μH
L2	YU40740-220KY	COIL	22μH

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AF BOARD ASSEMBLY <13>

⚠ REF. No.	PART No.	PART NAME, DESCRIPTION	
PWBA	YB20239A-01	AF BOARD ASSY	
IC1	HA13489MP-XE	IC	
IC2	BA10324F	IC	
	or XRA10324F	IC	
	or UPC324G2	IC	
IC3	TC7S04F	IC	
IC4	UPC319G2	IC	
	or AN1319S	IC	
IC5	HA118020MA	IC	
IC6	TC7S32F	IC	
IC7	MN18888JWT	IC	
IC8	MN12821(QR)	IC	
Q1	2SC3936(BC)	TRANSISTOR	
Q2	2SC3936(BC)	TRANSISTOR	
Q3	2SC3936(BC)	TRANSISTOR	
Q4	2SC3936(BC)	TRANSISTOR	
Q5	2SC3936(BC)	TRANSISTOR	
Q6	2SC3936(BC)	TRANSISTOR	
Q7	2SC3936(BC)	TRANSISTOR	
Q8	2SA1532(BC)	TRANSISTOR	
Q9	DTA114EU	TRANSISTOR	
Q10	2SC3936(BC)	TRANSISTOR	
Q11	2SC3936(BC)	TRANSISTOR	
Q12	2SC3936(BC)	TRANSISTOR	
Q13	2SC3936(BC)	TRANSISTOR	
Q14	2SC3936(BC)	TRANSISTOR	
Q15	DTB113ZK	TRANSISTOR	
Q16	DTC114WU	TRANSISTOR	
Q17	2SA1532(BC)	TRANSISTOR	
Q18	2SC3936(BC)	TRANSISTOR	
Q19	DTC114WU	TRANSISTOR	
Q20	2SA1532(BC)	TRANSISTOR	
Q21	2SA1532(BC)	TRANSISTOR	
D2	1SS99	DIODE	
D3	MA141WK	DIODE	
D4	MA141WK	DIODE	
D5	MA141WK	DIODE	
R1	NRSA63J-333N	RESISTOR	33kΩ,1/16W
R2	NRSA63J-153N	RESISTOR	15kΩ,1/16W
R3	NRSA63J-392N	RESISTOR	3.9kΩ,1/16W
R4	NRSA63J-152N	RESISTOR	1.5kΩ,1/16W
R5	NRSA63J-821N	RESISTOR	820Ω,1/16W
R6	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R7	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R8	NRSA63J-333N	RESISTOR	33kΩ,1/16W
R9	NRSA63J-153N	RESISTOR	15kΩ,1/16W
R10	NRSA63J-392N	RESISTOR	3.9kΩ,1/16W
R11	NRSA63J-152N	RESISTOR	1.5kΩ,1/16W
R12	NRSA63J-821N	RESISTOR	820Ω,1/16W
R13	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R14	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
R15	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R16	NRSA63J-122N	RESISTOR	1.2kΩ,1/16W
R17	NRSA63J-152N	RESISTOR	1.5kΩ,1/16W
R18	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R19	NRSA63J-472N	RESISTOR	4.7kΩ,1/16W
R20	NRSA63J-472N	RESISTOR	4.7kΩ,1/16W
R21	NRSA63J-122N	RESISTOR	1.2kΩ,1/16W
R22	NRSA63J-392N	RESISTOR	3.9kΩ,1/16W
R23	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R24	NRSA63J-272N	RESISTOR	2.7kΩ,1/16W
R25	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R26	NRSA63J-122N	RESISTOR	1.2kΩ,1/16W
R27	NRSA63J-562N	RESISTOR	5.6kΩ,1/16W
R28	NRSA63J-102N	RESISTOR	1kΩ,1/16W
R29	NRSA63J-562N	RESISTOR	5.6kΩ,1/16W
R30	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R31	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R32	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R33	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R34	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R35	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R36	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R37	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R38	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R39	NRSA63J-153N	RESISTOR	15kΩ,1/16W
R40	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R42	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
R44	NRSA63J-682N	RESISTOR	6.8kΩ,1/16W
R45	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R46	NRSA63J-152N	RESISTOR	1.5kΩ,1/16W
R47	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R48	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R49	NRSA63J-101N	RESISTOR	100Ω,1/16W
R50	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R51	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R52	NRSA63J-103N	RESISTOR	10kΩ,1/16W
R53	NRSA63J-103N	RESISTOR	10kΩ,1/16W

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	R54	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R57	NRSA63J-182N	RESISTOR	1.8kΩ,1/16W
	R58	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R59	NRSA63J-471N	RESISTOR	470Ω,1/16W
	R60	NRSA63J-472N	RESISTOR	4.7kΩ,1/16W
	R61	NRSA63J-105N	RESISTOR	1MΩ,1/16W
	R62	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
	R63	NRSA63J-183N	RESISTOR	18kΩ,1/16W
	R64	NRSA63J-683N	RESISTOR	68kΩ,1/16W
	R65	NRSA63J-152N	RESISTOR	1.5kΩ,1/16W
	R67	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
	R68	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R69	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R70	NRSA63J-392N	RESISTOR	3.9kΩ,1/16W
	R71	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R72	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R73	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R74	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R75	NRSA63J-223N	RESISTOR	22kΩ,1/16W
	R76	NRSA63J-223N	RESISTOR	22kΩ,1/16W
	R77	NRSA63J-562N	RESISTOR	5.6kΩ,1/16W
	R78	NRSA63J-104N	RESISTOR	100kΩ,1/16W
	R79	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R80	NRSA63J-123N	RESISTOR	12kΩ,1/16W
	R83	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
	R84	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
	R85	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
	R86	NRSA63J-104N	RESISTOR	100kΩ,1/16W
	R87	NRSA63J-822N	RESISTOR	8.2kΩ,1/16W
	R88	NRSA63J-223N	RESISTOR	22kΩ,1/16W
	R89	NRSA63J-472N	RESISTOR	4.7kΩ,1/16W
	R90	NRSA63J-123N	RESISTOR	12kΩ,1/16W
	R91	NVP1302-222N	V RESISTOR,IRIS	2.2kΩ
	R92	NRSA63J-302N	RESISTOR	3kΩ,1/16W
	R93	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R94	NRSA63J-223N	RESISTOR	22kΩ,1/16W
	R95	NRSA63J-561N	RESISTOR	560Ω,1/16W
	R96	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R97	NRSA63J-273N	RESISTOR	27kΩ,1/16W
	R98	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R99	NRSA63J-123N	RESISTOR	12kΩ,1/16W
	R100	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R101	NRSA63J-684N	RESISTOR	680kΩ,1/16W
	R102	NRSA63J-332N	RESISTOR	3.3kΩ,1/16W
	R103	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R104	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R105	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R106	NRSA63J-123N	RESISTOR	12kΩ,1/16W
	R107	NVP1302-332N	V RESISTOR,OFF SET	3.3kΩ
	R108	NRSA63J-472N	RESISTOR	4.7kΩ,1/16W
	R109	NRSA63J-104N	RESISTOR	100kΩ,1/16W
	R110	NVP1302-334N	V RESISTOR,GAIN	330kΩ
	R111	NRSA63J-224N	RESISTOR	220kΩ,1/16W
	R112	NRSA63J-822N	RESISTOR	8.2kΩ,1/16W
	R113	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R114	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R115	NRSA63J-103N	RESISTOR	10kΩ,1/16W

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	R116	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R117	NRSA63J-104N	RESISTOR	100kΩ,1/16W
	R118	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R119	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R120	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R122	NRSA63J-392N	RESISTOR	3.9kΩ,1/16W
	R123	NRSA63J-392N	RESISTOR	3.9kΩ,1/16W
	R124	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
	R125	NRSA63J-0R0A	RESISTOR	0Ω,1/16W
	C1	NCF31CZ-104A	CAPACITOR	0.1µF,16V
	C2	NEH30JM-226NZ	E CAPACITOR	22µF,6.3V
	or	NEH10JM-226NZ	E CAPACITOR	22µF,6.3V
	C3	NCF31CZ-104A	CAPACITOR	0.1µF,16V
	C4	NEH31CM-106NZ	E CAPACITOR	10µF,16V
	or	NEH11CM-106NZ	E CAPACITOR	10µF,16V
	C5	NCF31CZ-104A	CAPACITOR	0.1µF,16V
	C6	NEH30JM-226NZ	E CAPACITOR	22µF,6.3V
	or	NEH10JM-226NZ	E CAPACITOR	22µF,6.3V
	C7	NEH31CM-106NZ	E CAPACITOR	10µF,16V
	or	NEH11CM-106NZ	E CAPACITOR	10µF,16V
	C8	NCF31CZ-104A	CAPACITOR	0.1µF,16V
	C9	PU59913-473K	CAPACITOR	0.047µF,50V
	C10	PU59913-473K	CAPACITOR	0.047µF,50V
	C11	NCB31EK-103A	CAPACITOR	0.01µF,25V
	C12	NCT07CH-121A	CAPACITOR	120pF,50V
	C13	NCT07CH-330A	CAPACITOR	33pF,50V
	C14	NCB31HK-102A	CAPACITOR	0.001µF,50V
	C15	QEF80GM-475XB	TANTAL CAPACITOR	4.7µF,4V
	C16	NCR31CK-223A	CAPACITOR	0.022µF,16V
	C17	QEF80GM-475XB	TANTAL CAPACITOR	4.7µF,4V
	C18	NCR31CK-223A	CAPACITOR	0.022µF,16V
	C19	QEF80GM-475XB	TANTAL CAPACITOR	4.7µF,4V
	C20	QEF80GM-475XB	TANTAL CAPACITOR	4.7µF,4V
	C21	NCR31CK-223A	CAPACITOR	0.022µF,16V
	C22	QEF80GM-475XB	TANTAL CAPACITOR	4.7µF,4V
	C23	QEF80GM-475XB	TANTAL CAPACITOR	4.7µF,4V
	C24	NCR31CK-223A	CAPACITOR	0.022µF,16V
	C25	QEF80GM-475XB	TANTAL CAPACITOR	4.7µF,4V
	C26	QEF80GM-475XB	TANTAL CAPACITOR	4.7µF,4V
	C27	NCF31CZ-104A	CAPACITOR	0.1µF,16V
	C28	NCB31EK-103A	CAPACITOR	0.01µF,25V
	C29	QEF80GM-475XB	TANTAL CAPACITOR	4.7µF,4V
	C30	QEF80GM-475XB	TANTAL CAPACITOR	4.7µF,4V
	C31	QEF80GM-475XB	TANTAL CAPACITOR	4.7µF,4V
	C32	NCB31EK-103A	CAPACITOR	0.01µF,25V
	C33	NCR31CK-223A	CAPACITOR	0.022µF,16V
	C34	NCB31EK-103A	CAPACITOR	0.01µF,25V
	C36	QCYA1EK-104	CAPACITOR	0.1µF,25V
	C37	NCS31HJ-331A	CAPACITOR	330pF,50V
	C38	QCYA1EK-104	CAPACITOR	0.1µF,25V
	C39	QEF81CM-105XB	TANTAL CAPACITOR	1µF,16V
	C40	NCS31HJ-331A	CAPACITOR	330pF,50V
	C41	QCYA1EK-104	CAPACITOR	0.1µF,25V
	C42	NCS31HJ-331A	CAPACITOR	330pF,50V
	C43	QCYA1EK-104	CAPACITOR	0.1µF,25V
	C44	NCS31HJ-331A	CAPACITOR	330pF,50V
	C45	NCF31CZ-104A	CAPACITOR	0.1µF,16V
	C46	NCT07CH-151A	CAPACITOR	150pF,50V

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	C47	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C48	NCT07CH-330A	CAPACITOR	33pF,50V
	C49	NCT07CH-330A	CAPACITOR	33pF,50V
	C51	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C52	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C53	NCT07CH-151A	CAPACITOR	150pF,50V
	C54	NCT07CH-151A	CAPACITOR	150pF,50V
	C55	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C56	PU59913-473K	CAPACITOR	0.047μF,50V
	C57	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C58	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C59	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C60	NCT07CH-100A	CAPACITOR	10pF,50V
	C61	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C62	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C63	PU59758-105	CAPACITOR	1μF,50V
	C64	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C65	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C66	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C67	NCT07CH-560A	CAPACITOR	56pF,50V
	L1	YU40740-470KY	COIL	47μH
		or YU41135-470KY	COIL	47μH
	L2	YU40740-220KY	COIL	22μH
		or YU41135-220KY	COIL	22μH
	L3	YU40740-470KY	COIL	47μH
		or YU41135-470KY	COIL	47μH
	L4	YU40740-470KY	COIL	47μH
		or YU41135-470KY	COIL	47μH
	L5	PU58201-330K	COIL	33μH
	L6	PU58201-121K	COIL	120μH
	EQ1	YU41162	EQUALIZER	
	LPF1	YU41161	FILTER	
	BPF1	YU40700	FILTER	
	BPF2	YU41033	FILTER	
⚠	X1	YU41349	CRYSTAL RESONATOR	
	TP1	YU40581-AW	CHIP TP (2125)	
	SPC1	YQM30029-31	SPACER	
	CN-A1	YU40663-6	CAP HOUSING	
	CN-A2	YU40664-12	CAP HOUSING	
	CN-A4	YU40663-8	CAP HOUSING	
	CN-A5	YU40096-4R	CAP HOUSING	
	CN-A6	YU40096-4	CAP HOUSING	
	CN-A7	YU40096-2	CAP HOUSING	
	CN-A8	YU40096-4	CAP HOUSING	
	CN-A9	YU40096-4B	CAP HOUSING	
	CN-A10	YU40096-4Y	CAP HOUSING	
	CN-A11	YU40096-3	CAP HOUSING	

—AFE BOARD ASSEMBLY—

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	PWBA	YB20287A	AFE BOARD ASSY	
	IC9	TC7S00F	IC	
	D1	MA141WK	DIODE	
	R129	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
	R130	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	C50	QEF81CM-105XB	TANTAL CAPACITOR	1μF,16V

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CTL BOARD ASSEMBLY <14>

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	PWBA	YB30055A-C	CTL BOARD ASSY	
	SW401	YU41289-Z	TACT SWITCH	
	SW402	YU41289-Z	TACT SWITCH	
	SW403	YU41289-Z	TACT SWITCH	
	CN401	YU40663-6	CAP HOUSING,(BOARD TO BOARD)	

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DRUM BOARD ASSEMBLY <30>

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	PWB	YDM3021-2	UPPER DRUM BOARD	

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E.VF BOARD ASSEMBLY <50>

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	PWBA	YU30315-082	E.VF BOARD ASSY	
⚠	IC1	AN2512S	IC	
⚠	IC2	AN78L05-TA	IC	
	D01	DCB010	DIODE	
		or MA151WK	DIODE	
		or DAN202K	DIODE	
⚠	D02	ERA22-04	DIODE	
	D03	MA152WK	DIODE	
	D04	ESJA04-02	DIODE	
	D05	MA157A	DIODE	
	VR1	YU30315-201	V RESISTOR, V SIZE	
		or YU30315-202	V RESISTOR	
	VR2	YU30315-203	V RESISTOR, H. HOLD	
		or YU30315-204	V RESISTOR	
	VR3	YU30315-205	V RESISTOR, CONT	
	VR4	YU30315-206	V RESISTOR, BRIGHT	
	R01	QRSA08J-3R9YN	CHIP RESISTOR	3.9Ω,1/10W
		or QRSA08J-7R5YN	CHIP RESISTOR	7.5Ω,1/10W
		or QRSA08J-6R2YN	CHIP RESISTOR	6.2Ω,1/10W
		or QRSA08J-5R1YN	CHIP RESISTOR	5.1Ω,1/10W
	R02	QRSA08J-473YN	CHIP RESISTOR	47kΩ,1/10W
	R03	QRSA08J-180YN	CHIP RESISTOR	18Ω,1/10W
	R04	QRSA08J-514	CHIP RESISTOR	510kΩ,1/10W
	R06	QRSA08J-122YN	CHIP RESISTOR	1.2kΩ,1/10W

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION	
	R07	QRSA08J-104YN	CHIP RESISTOR	100kΩ,1/10W
	R08	QRSA08J-122YN	CHIP RESISTOR	1.2kΩ,1/10W
	R09	QRSA08J-561YN	CHIP RESISTOR	560Ω,1/10W
	R10	QRSA08J-472	CHIP RESISTOR	4.7kΩ,1/10W
	R16	QRSA08J-103YN	CHIP RESISTOR	10kΩ,1/10W
	R20	QRSA08J-512	CHIP RESISTOR	5.1kΩ,1/10W
	R21	QRSA08J-512	CHIP RESISTOR	5.1kΩ,1/10W
	R22	QRSA08J-103YN	CHIP RESISTOR	10kΩ,1/10W
	R23	QRSA08J-102YN	CHIP RESISTOR	1kΩ,1/10W
	R24	QRSA08J-273YN	CHIP RESISTOR	27kΩ,1/10W
	R30	QRS188J-335YN	CHIP RESISTOR	3.3MΩ,1/8W
	R31	QRS188J-335YN	CHIP RESISTOR	3.3MΩ,1/8W
	R32	QRSA08J-332YN	CHIP RESISTOR	3.3kΩ,1/10W
	R42	QRSA08J-125YN	CHIP RESISTOR	1.2MΩ,1/10W
	R50	QRSA08J-200	CHIP RESISTOR,RX	20Ω,1/10W
		or QRSA08J-120YN	CHIP RESISTOR,RX	12Ω,1/10W
		or QRSA08J-150YN	CHIP RESISTOR,RX	*1 15Ω,1/10W
		or QRSA08J-240	CHIP RESISTOR,RX	24Ω,1/10W
		or QRSA08J-270YN	CHIP RESISTOR,RX	27Ω,1/10W
	C01	YU30181-506	TANTAL CAPACITOR	0.1μF,16V
	C02	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C03	QEK41HM-335	E CAPACITOR	3.3μF,50V
	C04	QEK41HM-474	E CAPACITOR	0.47μF,50V
	C05	QEK41CM-106	E CAPACITOR	10μF,16V
	C10	QETA1AM-107	E CAPACITOR	100μF,10V
	C11	QEK40JM-227	E CAPACITOR	220μF,6.3V
	C12	QETA1AM-107	E CAPACITOR	100μF,10V
	C20	QCTA1CH-221	CAPACITOR	220pF,16V
	C21	QEK41HM-335	E CAPACITOR	3.3μF,50V
	C22	QEK41CM-106	E CAPACITOR	10μF,16V
	C24	QCYA1EK-333	CAPACITOR	0.033μF,25V
	C30	QCF81CZ-105	CAPACITOR	1μF,16V
	C31	QER41EM-475	E CAPACITOR	4.7μF,25V
	C32	QEF42AJ-202	CAPACITOR	0.002μF,100V
		or QEF42AJ-222	CAPACITOR	0.0022μF,100V
		or QEF42AJ-432	CAPACITOR	0.0043μF,100V
		or QEF42AJ-362	CAPACITOR	0.0036μF,100V
		or QEF42AJ-272	CAPACITOR	0.0027μF,100V
		or QEF42AJ-242	CAPACITOR	0.0024μF,100V
		or QEF42AJ-472	CAPACITOR	0.0047μF,100V
		or QEF42AJ-332	CAPACITOR	0.0033μF,100V
		or QEF42AJ-392	CAPACITOR	0.0039μF,100V
	C33	PU59343	CAPACITOR	0.0015μF,400V
	L01	YU30315-207	COIL	
	L02	YU30315-208	HL COIL	
	TR1	2SC2812	TRANSISTOR	
		or 2SC2412K	TRANSISTOR	
		or 2SC3052	TRANSISTOR	
		or 2SD601A	TRANSISTOR	
	TR2	2SD1615A	TRANSISTOR	
⚠	T1	YU30315-209	FLY BACK TRANS	

⚠	REF. No.	PART No.	PART NAME, DESCRIPTION
	WR1	YU30315-212	WIRE ASSY
	WR2	YU30315-214	CRT SOCKET ASSY
	CN1	YU30315-210	CAP HOUSING
	CN2	YU30315-210	CAP HOUSING
	CN3	YU40095-4	CAP HOUSING
⚠	CP1	YU30315-213	CIRCUIT PROTECTOR
	TF1	YU30236-110	THERMAL FISE

*1 When chenging it, use the same value as the original.

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END SENSOR BRACKET ASSEMBLY <55>

PWBA	YS40066A	END SENSOR BRACKET ASSY

SECTION 8
DESCRIPTION OF NEW TECHNOLOGY

8.1 FUNCTIONS OF MECHACON CPU TERMINALS (IC401)

Pin No.	Symbol	Signal	OUT/IN	Contents
1	P63	VIDEO PB (L)	OUT	
2	P62	VIDEO REC (L)	OUT	
3	P61	VIDEO MUTE (H)	OUT	Video signal output mute.
4	P60	VIDEO REC MUTE (L)	OUT	
5	AN7	GND	IN	Not used.
6	AN6	REG SHORT (H)	IN	POWER OFF CONTROL
7	AN5	BATTERY V. DET	IN	ALARM<9.2 V, POWER OFF<8.8 V
8	AN4	DEW SENSOR	IN	DEW SENSOR DETECT
9	AN3	MECHANISM DATA	IN	MODE SW, CASSETTE SW
10	AN2	NTSC(L)/PAL(H)	IN	
11	AN1	END SENSOR	IN	TAPE END DETECT
12	AN0	OPERATION KEY	IN	
13	P71	TEST0	IN	When both High: NORM mode
14	P70	TEST1	IN	When both Low: EMERGENCY OFF mode
15	P37	GND	IN	Not used.
16	SCLK	SERIAL CLOCK 1	IN/OUT	Output of serial data to electronic view finder CPU. Refer to section 8.3.
17	SOUT	SERIAL DATA 1	OUT	
18	P34	AC ADAPTER (L)	IN	DC INPUT DETECT for power saving
19	CNTR	CAPSTAN FG	IN	SP/LP selection and tape remaining control
20	INT2	POWER ON DET (L)	IN	POWER, EJECT, REC SAFETY switch is DETECT
21	P31	GND	IN	Not used.
22	P30	POWER LED ON (L)	OUT	
23	INT1	DRUM FF	IN	Video head rotation phase
24	CNVss	GND	IN	
25	RESET	RESET (L)	IN	
26	Xin	4 MHz	IN	CPU CLOCK
27	Xout	4 MHz	OUT	
28	Ø	NC	OUT	Not used.
29	Vss	GND	IN	
30	P57	PB CTL PULSE	IN	SP/LP, EDIT POINT, REVERSE TRACKING DETECT
31	P56	MODE4	IN	EDIT timing (CH-4 HEAD) DETECT
32	P55	COLLECT PULSE	IN	EDIT timing (CH-1, CH-2) DETECT
33	P54	SUPPLY REEL FG	IN	Supply reel rotation, Tape remaining DETECT
34	P53	REC SAFETY SW (L)	IN	
35	P52	POWER SW ON (L)	IN	
36	P51	EJECT SW ON (L)	IN	
37	P50	SW COVER	IN	H: REC, L: PB
38	P17	TRIGGER SW ON (L)	IN	
39	P16	TRACKING − ON (L)	IN	Tracking switch point
40	P15	TRACKING + ON (L)	IN	
41	P14	MODE CTL M. REV (H)	OUT	Mode control motor drive.
42	P13	MODE CTL M. FWD (H)	OUT	
43	P12	MODE CTL M. FAST (L)	OUT	
44	P11	END LED ON (L)	OUT	
45	P10	TAKE-UP REEL FG	IN	TAKE-UP reel rotation DETECT
46	P75	CTL ERASE HEAD	OUT	ON (H)/OFF (L)
47	P74	SERIAL CLOCK 2	OUT	Servo LSI control. Refer to section 8.2.
48	P73	SERIAL DATA 2	OUT	
49	P72	CAPSTAN CTL	OUT	SERVO (L)/MECHACON (H)
50	P07	S. CAP STOP	OUT	Always (L).
51	P06	TRACK ADVANCE	OUT	Track shift with H when correcting REVERSE TRACKING.
52	P05	TRACK CHECK	OUT	H during detecting REVERSE TRACKING.
53	P04	TRACK SHIFT	OUT	Always (L).

Pin No.	Symbol	Signal	OUT/IN	Contents
54	P03	A. BIAS ON (L)	OUT	REC (H)
55	P02	AUDIO MUTE (H)	OUT	Audio signal output mute.
56	P01	AUDIO PB (L)	OUT	
57	P00	SERIAL READY	IN	At H, data are transferred to IND. CPU.
58	P27	TRIGGER (H)	OUT	MASTER EDIT CONTROL.
59	P26	EP (H)/SP (L)	OUT	
60	P25	CAPSTAN FWD (L)	OUT	Capstan motor direction control.
61	P24	CAPSTAN STOP (H)	OUT	
62	P23	CAMERA POWER	OUT	ON (H)/OFF (L)
63	P22	DECK POWER	OUT	ON (H)/OFF (L)
64	P21	DRUM ON (H)	OUT	
65	Vss	GND	IN	
66	P20	V. PULSE ON (H)	OUT	SERACH/STILL (H)
67	Vcc	UNSW 5V	IN	
68	AVss	GND	IN	
69	Vref	REG 5V	IN	
70	D-A	CAPSTAN MOTOR REF	OUT	Capstan motor drive generator during FF/REW.
71	PWM	NC	OUT	
72	P64	FLYING ERASE HEAD	OUT	ON (H)/OFF (L)

Table 8-1 IC401 pin function

8.2 SERVO CIRCUIT

8.2.1 SERVO LSI Terminal Functions (IC101)

Pin No.	Label	OUT/IN	Contents
1	CHECK 1	IN	Fixed at (L).
2	CHECK 2	IN	Normally (L). At (H), PIN 20 COLLECT PULSE is output.
3	MONITOR 1	OUT	DRUM SAMPLING state is output.
4	MONITOR 2	OUT	CAPSTAN SAMPLING state is output.
5	DRUM POWER UP	OUT	(H) is output when DRUM FG frequency is lower than -17%. (L) is output when DRUM FG frequency is higher than -12%.
6	NC		
7	CAP POWER UP	OUT	(H) is output when CAPSTAN FG frequency is lower than -10%. (L) is output when CAPSTAN FG is higher than -7%. (H) is output when SEARCH or RETAKE *REV.
8	HEAD SW-D	OUT	VIDEO HEAD SWITCHING PULSE (12.5 Hz)
9	HEAD SW-C	OUT	VIDEO HEAD SWITCHING PULSE (12.5 Hz)
10	HEAD SW-B	OUT	VIDEO HEAD SWITCHING PULSE (12.5 Hz)
11	GND	IN	
12	HEAD SW-A	OUT	VIDEO HEAD SWITCHING PULSE (12.5 Hz)
13	DRUM APC PWM	OUT	DRUM PHASE ERROR (1.953 kHz)
14	DRUM AFC PWM	OUT	DRUM SPEED ERROR (3.906 kHz)
15	CAP APC PWM	OUT	CAPSTAN PHASE ERROR (1.953 kHz)
16	CAP AFC PWM	OUT	CAPSTAN SPEED ERROR (1.953 kHz)
17	REF CLOCK	IN	4.43 MHz standard clock.
18	NC		
19	EP DELAY MMV	IN/OUT	Time constant for SP/LP TRACKING correction (25 Hz).
20	COLLECT PULSE	OUT	Pulse for checking REVERSE TRACKING (12.5 Hz)
21	SERIAL DATA	IN	Refer to 8.2.2.
22	SERIAL CLOCK	IN	
23	PB SW MMV	IN/OUT	Time constant for SWITCHING POINT correction (50 Hz).
24	DRUM FF	OUT	25 Hz
25	1/2 DRUM FF	OUT	12.5 Hz
26	FRAME PULSE	IN	25 Hz
27	V. PULSE	OUT	50 Hz (SEARCH or STILL)
28	CAPSTAN FG	OUT	1483 Hz
29	CONTROL PULSE	OUT	25 Hz
30	Vdd	IN	5 V

Pin No.	Label	OUT/IN	Contents
31	TEST (L)	IN	Not used.
32	CTL HEAD (−)	IN/OUT	
33	CTL HEAD (+)	IN/OUT	
34	GND	IN	0 V
35	CTL AMP (+)	IN	
36	CTL AMP (−)	IN	
37	CTL AMP	OUT	25 Hz
38	CONTROL PULSE	IN	25 Hz (PB)
39	Vdd	IN	5 V
40	CAP FG AMP (+)	IN	
41	CAP FG AMP (−)	IN	
42	CAP FG AMP	OUT	1483 Hz
43	CAPSTAN FG	IN	1483 Hz
44	DRUM PG/FG	IN	37.5 Hz/750 Hz

Table 8-2 IC101 pin function

8.2.2 Servo Serial Transfer Data

D5	D4	D3	D2	D1	D0	DIGITAL TRACKING DELAY TIME (msec)
0	0	0	0	0	0	0
↓						↓
1	0	0	0	0	0	16.38
↓						↓
1	1	1	1	1	1	32.26

Table 8-3 Serial data 1

D12	D11	D10	D9	D8	D7	D6	MODE
0	0	0	1	0	0	0	PLAY
1	1	0	1	1	0	0	SEARCH FF
1	1	1	0	1	0	0	SEARCH REW
0	0	1	1	0	0	0	PAUSE
0	0	0	1	0	1	1	REC
0	0	0	1	0	1	0	INSERT
0	0	X	X	0	0	1	ASSEMBLY EDIT
0	0	1	1	1	0	1	RE-TAKE FF
0	1	1	0	1	0	1	RE-TAKE REW

Table 8-4 Serial data 2

D13	V. PULSE WIDTH
1	9H
0	3H

Note: Fixed at (0)

Table 8-5 Serial data 3

D14	TAPE SPEED
1	LP
0	SP

Note: Fixed at (0)

Table 8-6 Serial data 4

D16	D15	CTL. PULSE DUTY		MODE
		LONG	SHORT	
X	1	60%	55%	NORMAL
0	0	65%	60%	I.F.E
1	0	30%	25%	VISS

X: 0 or 1

Table 8-7 Serial data 5

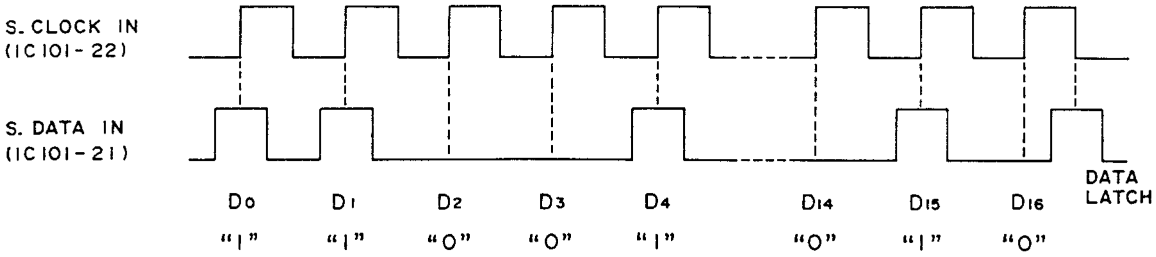


Fig. 8-1 MECHACON SERVO Serial Transfer.

8.2.3 Special Functions of Servo LSI.

(1) Fixation of Drum Phase Error

In the following case, the phase error will be fixed at 50% duty:

(a) When the DRUM FG frequency is off by over plus-minus 10%.

(2) Fixation of CAPSTAN Phase Error Output

In the following cases, the phase error will be fixed at 50% duty:

(a) When the DRUM FG frequency is off by over plus-minus 10%.

(b) When the CAPSTAN FG frequency is off by over plus-minus 10%.

(c) When two or more playback control pulses are missing.

(d) In case of PAUSE mode.

8.3 INDICATOR IC

8.3.1 Indicator IC Terminal Functions (IC201)

<table>
<tr><th>Pin No.</th><th>Symbol</th><th>Signal</th><th>OUT/IN</th><th colspan="5">Contents</th></tr>
<tr><td>1</td><td>P72</td><td>AGE 1/2 (L)</td><td>IN</td><td colspan="5">Switching of AGE 1/2.</td></tr>
<tr><td>2</td><td>P71</td><td>————</td><td>IN</td><td colspan="5"></td></tr>
<tr><td>3</td><td>P70</td><td>————</td><td>IN</td><td colspan="5"></td></tr>
<tr><td>4</td><td>P63</td><td>MODE SELECT (L)</td><td>IN</td><td colspan="5">Selection of Date/Time/Age indication.</td></tr>
<tr><td>5</td><td>P62</td><td>D/T/A SET − (L)</td><td>IN</td><td colspan="5">Count down of Date/Time/Age setting value.</td></tr>
<tr><td>6</td><td>P61</td><td>D/T/A SET + (L)</td><td>IN</td><td colspan="5">Count up of Date/Time/Age setting value.</td></tr>
<tr><td>7</td><td>P60</td><td>D/T/A SELECT (L)</td><td>IN</td><td colspan="5">Selection of Date/Time/Age setting item.</td></tr>
<tr><td>8</td><td>P53</td><td>————</td><td>IN</td><td colspan="5"></td></tr>
<tr><td>9</td><td>P52</td><td>————</td><td>IN</td><td>Destination</td><td>Domestic</td><td>USA</td><td>ENG</td><td>FRN</td></tr>
<tr><td>10</td><td>P51</td><td>SCREEN FORMAT 1</td><td>IN</td><td>P51</td><td>0</td><td>0</td><td>1</td><td>1</td></tr>
<tr><td>11</td><td>P50</td><td>SCREEN FORMAT 2</td><td>IN</td><td>P50</td><td>0</td><td>1</td><td>0</td><td>1</td></tr>
<tr><td>12</td><td>NC</td><td></td><td>IN</td><td colspan="5"></td></tr>
<tr><td>13</td><td>P43</td><td>————</td><td>IN</td><td colspan="5"></td></tr>
<tr><td>14</td><td>P42</td><td>LOW CONTRAST (L)</td><td>IN</td><td colspan="5">Flickering of low contrast display.</td></tr>
<tr><td>15</td><td>P41</td><td>S1000 SHUTTER (L)</td><td>IN</td><td colspan="5">Display of 1/1,000 shutter.</td></tr>
<tr><td>16</td><td>P40</td><td>FOCUS LOCK (L)</td><td>IN</td><td colspan="5">Display of focus lock.</td></tr>
<tr><td>17</td><td>Vss</td><td>GND</td><td>IN</td><td colspan="5"></td></tr>
<tr><td>18</td><td>XT 1</td><td rowspan="2">OSC 32.768 kHz for time pieces.</td><td>IN</td><td colspan="5"></td></tr>
<tr><td>19</td><td>XT 2</td><td>OUT</td><td colspan="5"></td></tr>
<tr><td>20</td><td>RESET</td><td></td><td>IN</td><td colspan="5"></td></tr>
<tr><td>21</td><td>X 1</td><td rowspan="2">CPU OSC 4.19 MHz</td><td>IN</td><td colspan="5"></td></tr>
<tr><td>22</td><td>X 2</td><td>OUT</td><td colspan="5"></td></tr>
<tr><td>23</td><td>P33</td><td>————</td><td>IN</td><td colspan="5"></td></tr>
<tr><td>24</td><td>P32</td><td>STROBE (H)</td><td>OUT</td><td colspan="5">Latch pulse for OSD data.</td></tr>
<tr><td>25</td><td>P31</td><td>————</td><td>IN</td><td colspan="5"></td></tr>
<tr><td>26</td><td>P30</td><td>SERIAL READY</td><td>OUT</td><td colspan="5">MECHACON (H)/OSD (L)</td></tr>
<tr><td>27</td><td>P81</td><td>————</td><td>IN</td><td colspan="5"></td></tr>
<tr><td>28</td><td>P80</td><td>————</td><td>IN</td><td colspan="5"></td></tr>
<tr><td>29</td><td>SI</td><td>SERIAL DATA 1</td><td>IN</td><td colspan="5">Input of serial data from Mechacon.</td></tr>
<tr><td>30</td><td>SO</td><td>SERIAL DATA 2</td><td>OUT</td><td colspan="5">Output of serial data to OSD.</td></tr>
<tr><td>31</td><td>SCK</td><td>SERIAL CLOCK</td><td>IN/OUT</td><td colspan="5">MECHACON (IN)/OSD (OUT)</td></tr>
<tr><td>32</td><td>P00</td><td>————</td><td>IN</td><td colspan="5"></td></tr>
<tr><td>33</td><td>P13</td><td>————</td><td>IN</td><td colspan="5"></td></tr>
<tr><td>34</td><td>NC</td><td></td><td>IN</td><td colspan="5"></td></tr>
<tr><td>35</td><td>P12</td><td>BATTERY ALARM (L)</td><td>IN</td><td colspan="5">Flickering of battery alarm display.</td></tr>
<tr><td>36</td><td>INT 1</td><td>BATTERY DOWN (L)</td><td>IN</td><td colspan="5">Entry into CPU STAND-BY MODE.</td></tr>
<tr><td>37</td><td>INT 0</td><td>BUSY (L)</td><td>IN</td><td colspan="5">Output of data to OSD at time of shut down.</td></tr>
<tr><td>38</td><td>NC</td><td></td><td>IN</td><td colspan="5"></td></tr>
<tr><td>39</td><td>Vdd</td><td>5 V</td><td>IN</td><td colspan="5"></td></tr>
<tr><td>40</td><td>P23</td><td>————</td><td>IN</td><td colspan="5"></td></tr>
<tr><td>41</td><td>P22</td><td>————</td><td>IN</td><td colspan="5"></td></tr>
<tr><td>42</td><td>P21</td><td>————</td><td>IN</td><td colspan="5"></td></tr>
<tr><td>43</td><td>P20</td><td>TRIGGER ALARM</td><td>OUT</td><td colspan="5">Output of 3.6 kHz pulse.</td></tr>
<tr><td>44</td><td>P73</td><td>DISPLAY REC (L)</td><td>IN</td><td colspan="5">Selection of D/T/A recording or not.</td></tr>
</table>

Table 8-8 IC201 pin function

8.3.2 Indicator Serial Transfer Data

	D7	D6	D5	D4	D3	D2	D1	D0	E. VF Display	Mode
1st Data								0	No display	Battery capacity O.K.
								1	Battery	Battery capacity insufficient.
							0		Three times	Three times mode.
							1		No display	Standard mode.
					0	0			No display	STOP, PB
					0	1			—	REC PAUSE
					1	0			No display	EE
					1	1			Recording in progress	REC
	0	0	0	1					Cassette	Cassette not fitted yet
	0	0	1	0					Refer to 2nd data	Emergency.
	0	0	1	1					XX minutes remaining	Remaining tape.
	↓									
	1	1	1	0						
2nd Data	1	1	1	1	0	0	0	1	E01	LOADING NG
	1	1	1	1	0	0	1	0	E02	UNLOADING NG
	1	1	1	1	0	0	1	1	E03	REEL FG NG
	1	1	1	1	0	1	0	0	E04	DRUM FF NG
	1	1	1	1	0	1	0	1	E05	PB CTL PULSE NG
	1	1	1	1	0	1	1	0	E06	Not used.
	1	1	1	1	0	1	1	1	E07	Not used.
	1	1	1	1	1	0	0	1	Dewing	Dewing generated.

Table 8-9 Serial data

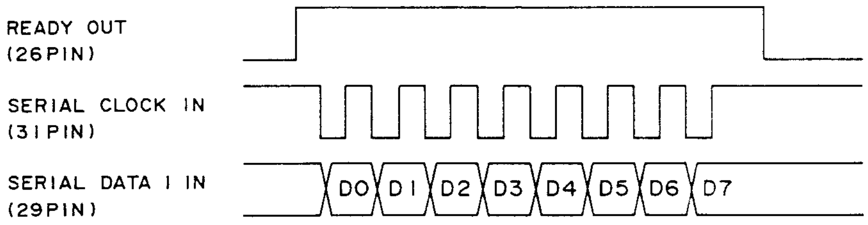

READY OUT
(26PIN)
SERIAL CLOCK IN
(31PIN)
SERIAL DATA 1 IN
(29PIN)
D0
D1
D2
D3
D4
D5
D6
D7

Fig. 8-2 MECHACON→IND Serial Transfer.

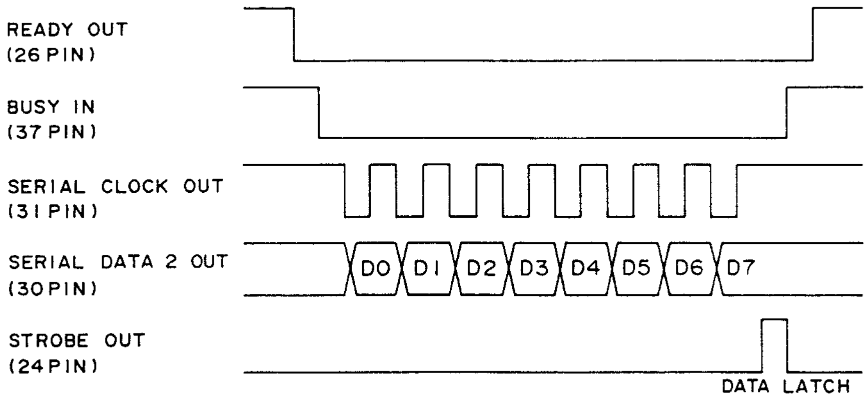

READY OUT
(26PIN)
BUSY IN
(37PIN)
SERIAL CLOCK OUT
(31PIN)
SERIAL DATA 2 OUT
(30PIN)
D0
D1
D2
D3
D4
D5
D6
D7
STROBE OUT
(24PIN)
DATA LATCH

Fig. 8-3 IND→OSD Serial Transfer.

SECTION 9
SERVICE GUIDE

9.1 EMERGENCY DISPLAY

Whenever some abnoral signal is supplied to mechacon CPU, the POWER LED will be flickered and an error number (E05, for example) displayed on the electronic view finder.

E.VF. Display	Symptom	Mode when observed	Resulting mode
E01	Mode control motor rotates for more than 10 sec. without shift to next mode.	LOADING.	Mode continues
E02	Mode control motor rotates for more than 10 sec. without shift to next mode.	UNLOADING.	Mode continues
E03	REEL FG input absent	REC. PLAY, SEARCH FF	STOP
E04	DRUM FF input absent	Drum rotation, Zero frame editing	STOP
E05	P.B. CTL pulse input absent	During Zero frame editing	STOP

Emergency mode	: Indication for 5 minutes, then power OFF (power not turned OFF when using AC adapter)
Port states	: Same as Stop mode
Effective key	: POWER
Shifted mode	: Power OFF

Table 9-1 Emergency mode indications

9.2 TROUBLE DIAGNOSIS BY OPEN CIRCUIT PROTECTOR

CP Number	Operation	Trouble
CP1 F10 0.4A	Power on	Power is not turnted ON.
CP2 F20 0.8A	Power on/off, Rehearsal, FF/REW	Normal.
	REC, PLAY	E02 emergency. E01 emergency by switching power ON again.
CP3 F15 0.6A	Power on/off, Rehearsal	Normal.
	FF/REW	FF/REW impossible.
	REC, PLAY	E04 emergency with tape remaining.
CP4 F20 0.8V	Power on/off FF/REW, PLAY	Normal.
	Rehearsal, REC	Camera picture cannot be seen, triggeer alarm not actuated.
CP5 F15 0.6A	Power on	Power is not turned ON.
CP6 F15 0.6A	Power on	Power turned ON instantaneously but goes OFF right away.

Table 9-2 Trouble diagnosis

SECTION 10
AC POWER ADAPTER (For EK MODELS)

NOTE: For EG models, please refer to Service Manual No. 86086 AA-V6EG

10.1 ELECTRICAL ADJUSTMENT

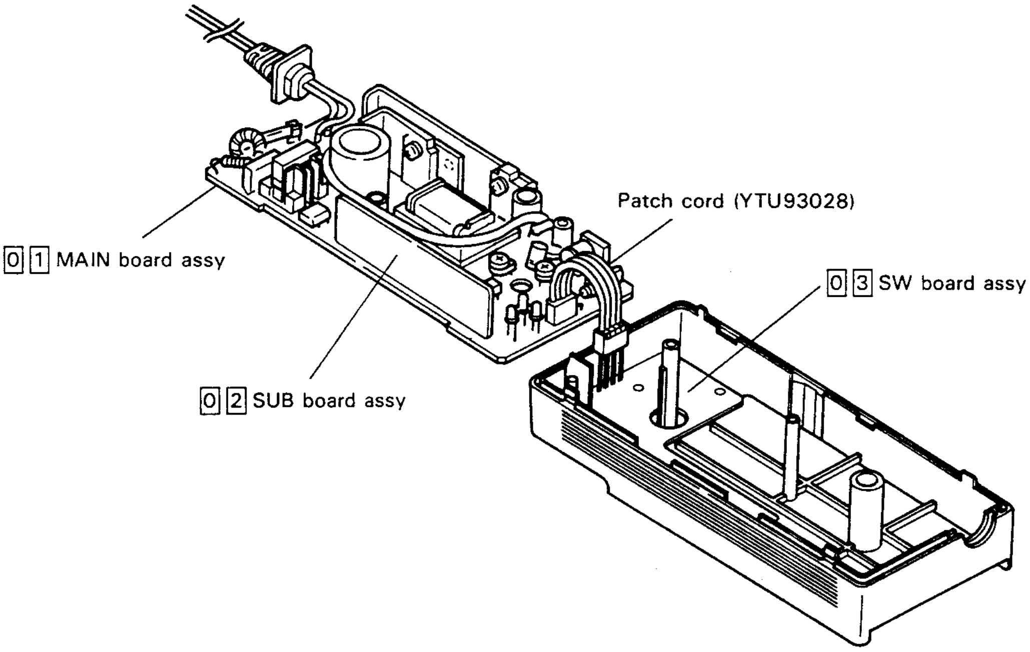


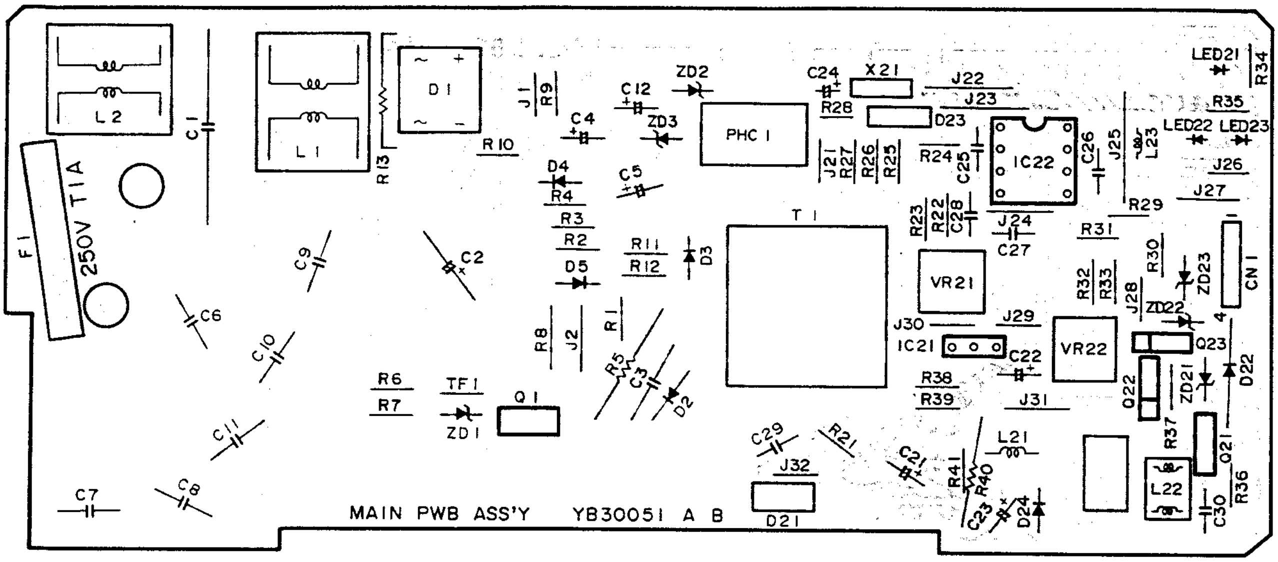
Fig. 10-1-1 Set up for adjustment

10.2 MAIN CIRCUIT (01 MAIN board)

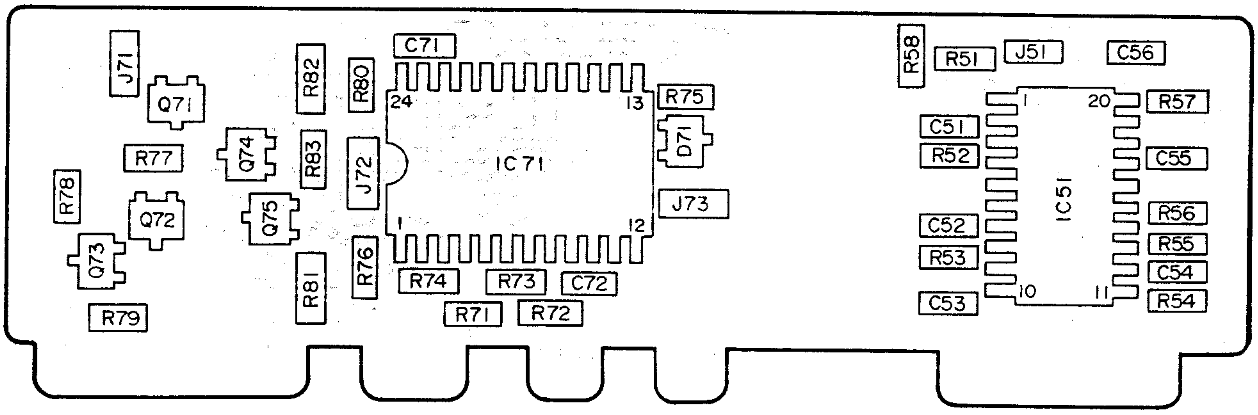
No.	Item	Mode & Signal	Test Point	Adjustment Parts	Procedure
			Waveform & Adjustment		
1.	OUTPUT Voltage	—	• OUTPUT Terminal	• VR21 (OUTPUT VOLTAGE) 01 MAIN	1) Connect the DC power cord to the DC jack. 2) Connect the other end of the DC power cord to a voltmeter. 3) Adjust VR21 for 10.7 V output voltage.
2.	Charging current	—	• BATTERY Terminal	• VR22 (CHARGING CURRENT) 01 MAIN	1) Depress SW1 of the switch board assembly. (Confirm LED 23 of the main board assembly lights.) 2) Connect an ammeter to the battery terminals. 3) Adjust VR22 for 50 mA.

10.3 CIRCUIT BOARDS

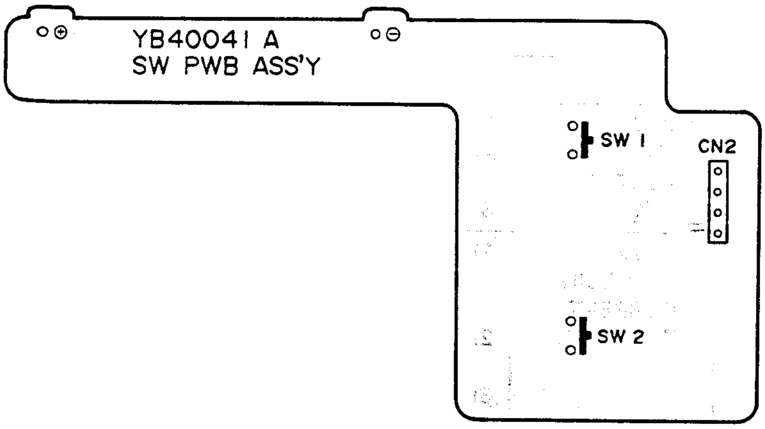
—MAIN CIRCUIT BOARD—


L2
L1
C1
F1
250V T1A
D1
R13
J1
R9
R10
C4
C12
ZD2
ZD3
PHC 1
C24
X21
R28
J22
J23
D23
LED21
R34
R35
LED22
LED23
J21
R27
R26
R25
R24
C25
IC22
C26
J25
L23
J26
J27
R29
D4
R4
C5
R3
R2
D5
R11
R12
D3
T1
R23
R22
C28
J24
C27
R31
VR21
R32
R33
R30
ZD23
CN1
C9
C2
C6
C10
R8
J2
R1
R5
C3
D2
J29
J30
IC21
C22
VR22
J28
ZD22
Q23
Q22
ZD21
D22
R6
R7
TF1
ZD1
Q1
R38
R39
J31
R37
Q21
C11
C29
R21
C21
L21
R41
R40
C23
D24
L22
C30
R36
J32
D21
C7
C8
MAIN PWB ASS'Y YB30051 A B

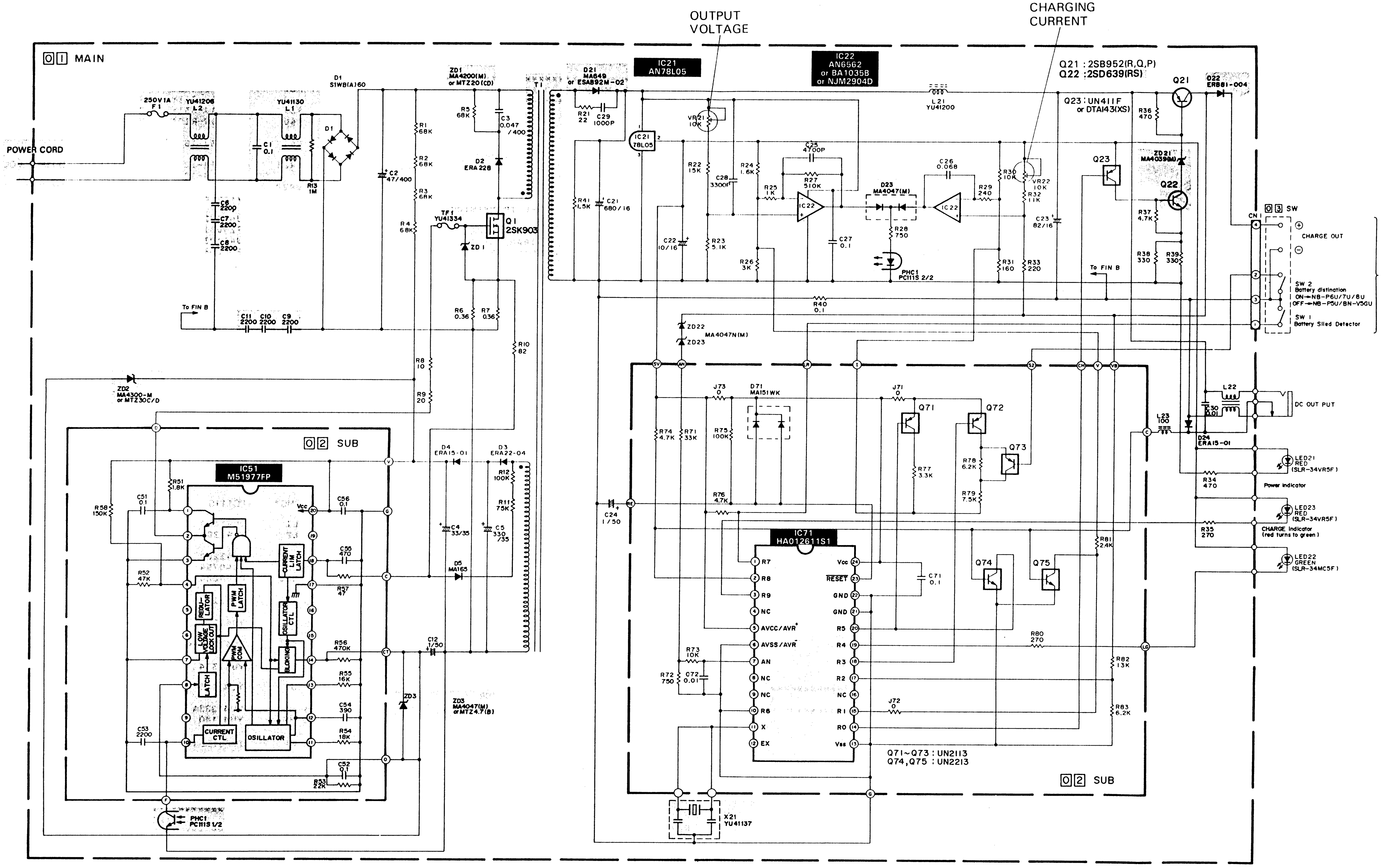
—SUB CIRCUIT BOARDS—


J71
Q71
R77
R78
Q72
Q73
R79
Q74
Q75
R82
R83
R81
R80
J72
R76
C71
IC71
24
13
1
12
R75
D71
J73
R74
R73
C72
R71
R72
R58
R51
J51
C56
C51
R52
C52
R53
C53
IC51
1
20
10
11
R57
C55
R56
R55
C54
R54

—SW CIRCUIT BOARD—

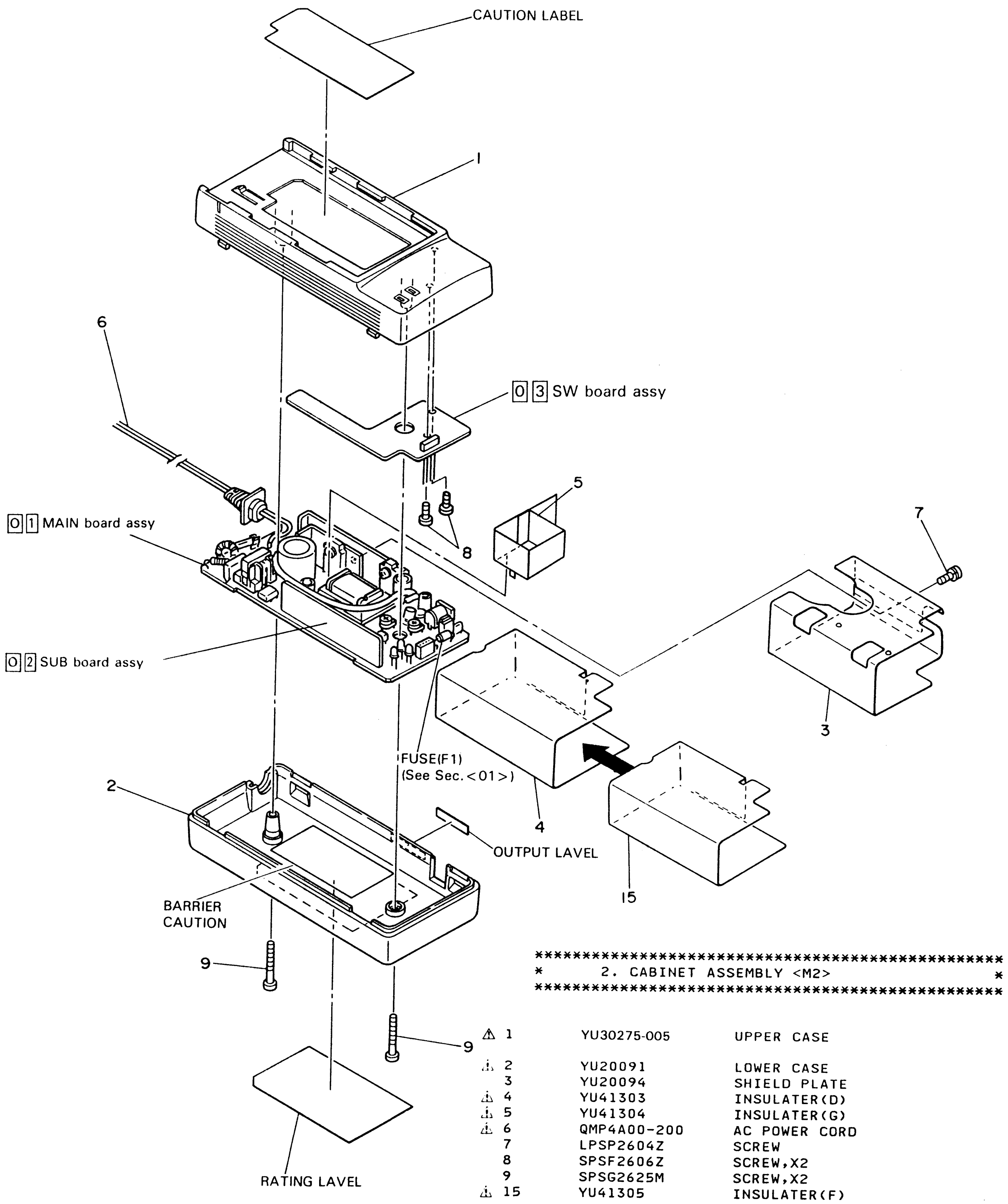

YB40041 A
SW PWB ASS'Y
SW 1
SW 2
CN2

10.4 MAIN SCHEMATIC DIAGRAM


OUTPUT VOLTAGE
CHARGING CURRENT
01 MAIN
POWER CORD
250V1A F1
YU41206 L2
YU41130 L1
C1 0.1
R13 1M
D1 S1WB(A)60
C6 2200
C7 2200
C8 2200
To FIN B
C11 2200 C10 2200 C9 2200
C2 47/400
R1 68K
R2 68K
R3 68K
R4 68K
ZD1 MA4200(M) or MTZ20(CD)
R5 68K
C3 0.047/400
D2 ERA22B
TF1 YU41334
Q1 2SK903
ZD1
R6 0.36
R7 0.36
R10 82
R8 10
R9 20
T1
ZD2 MA4300-M or MTZ30C/D
D21 MA649 or ESAB92M-02
R21 22
C29 1000P
IC21 AN78L05
IC21 78L05
R41 1.5K
C21 680/16
C22 10/16
VR21 10K
R22 15K
R23 5.1K
C28 3300P
IC22 AN6562 or BA10358 or NJM2904D
R24 1.6K
R25 1K
C25 4700P
R27 510K
IC22
R26 3K
C27 0.1
D23 MA4047(M)
R28 750
PHC1 PC111S 2/2
C26 0.068
IC22
R29 240
R30 10K
VR22 10K
R32 11K
C23 82/16
R31 160
R33 220
L21 YU41200
R40 0.1
ZD22
MA4047N(M)
ZD23
Q21 : 2SB952(R,Q,P)
Q22 : 2SD639(RS)
Q23 : UN411F or DTA143(XS)
Q21
D22 ERB81-004
R36 470
Q23
ZD21 MA4039(M)
Q22
R37 4.7K
R38 330
R39 330
To FIN B
03 SW
CN1
CHARGE OUT
⊕
⊖
SW2 Battery distination ON→NB-P6U/7U/8U OFF→NB-P5U/8N-V5GU
SW1 Battery Slied Detector
L22
C30 0.01
DC OUT PUT
L23 100
D24 ERA15-01
LED21 RED (SLR-34VR5F)
R34 470
Power indicator
LED23 RED (SLR-34VR5F)
R35 270
CHARGE indicator (red turns to green)
LED22 GREEN (SLR-34MC5F)
02 SUB
IC51 M51977FP
R51 1.8K
C51 0.1
R58 150K
R52 47K
Vcc
C56 0.1
C55 470
R57 47
CURRENT LIMIT LATCH
PWM LATCH
REGU-LATOR
OSCILLATOR CTL
LOW VOLTAGE LOCK OUT
PWM COM
BLOKING
LATCH
CURRENT CTL
OSCILLATOR
R56 470K
R55 16K
C54 390
R54 18K
C53 2200
C52 0.1
R53 22K
D4 ERA15-01
D3 ERA22-04
R12 100K
R11 75K
C4 33/35
C5 330/35
D5 MA165
C12 1/50
ZD3
ZD3 MA4047(M) or MTZ4.7(B)
PHC1 PC111S 1/2
C24 1/50
J73 0
D71 MA151WK
R74 4.7K
R71 33K
R75 100K
R76 4.7K
J71 0
Q71
Q72
Q73
R77 3.3K
R78 6.2K
R79 7.5K
IC71 HA012611S1
R7 R8 R9 NC AVCC/AVR AVSS/AVR AN NC NC R6 X EX
Vcc RESET GND GND R5 R4 R3 R2 NC R1 R0 Vss
C71 0.1
Q74
Q75
R80 270
R81 2.4K
R82 13K
R83 6.2K
R73 10K
R72 750
C72 0.01
J72 0
X21 YU41137
Q71~Q73 : UN2113
Q74,Q75 : UN2213
02 SUB

- Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

10.5 CABINET ASSEMBLY <M2>



2. CABINET ASSEMBLY <M2>

⚠	1	YU30275-005	UPPER CASE
⚠	2	YU20091	LOWER CASE
	3	YU20094	SHIELD PLATE
⚠	4	YU41303	INSULATER(D)
⚠	5	YU41304	INSULATER(G)
⚠	6	QMP4A00-200	AC POWER CORD
	7	LPSP2604Z	SCREW
	8	SPSF2606Z	SCREW,X2
	9	SPSG2625M	SCREW,X2
⚠	15	YU41305	INSULATER(F)

10.6 ELECTRICAL PARTS LIST

3. MAIN BOARD ASSEMBLY <01>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
⚠	PWBA	YB30051A	MAIN BOARD ASSY
	IC21	AN78L05	IC
	IC22	AN6562	IC
	OR	BA10358	IC
	OR	NJM2904D	IC
⚠	Q1	2SK903	FE TRANSISTOR
	Q21	2SB952(RQP)	TRANSISTOR
⚠	Q22	2SD639R,S	TRANSISTOR
	Q23	UN411F	DIGI TR
	OR	DTA143XS	DIGI TR
	D1	S1WB(A)60	BRIDGE DIODE
⚠	D2	ERA22-08	DIODE
	D3	ERA22-06	DIODE
	D4	ERA15-01	DIODE
	D5	MA165	DIODE
	LED21	SLR-34VR5F	LED
	LED22	SLR-34MC5F	LED
	LED23	SLR-34VR5F	LED
⚠	ZD1	MA4200(M)	ZENER DIODE
	OR	MTZ20(CD)	ZENER DIODE
⚠	ZD2	MA4300(M)	ZENER DIODE
	OR	MTZJ30(CD)	ZENER DIODE
⚠	ZD3	MA4047(M)	ZENER DIODE
	OR	MTZ4.7(B)	ZENER DIODE
⚠	D21	MA649	DIODE
	OR	ESAB92M-02	DIODE
⚠	D22	ERB81-004	DIODE
⚠	D23	MA175WK	DIODE
	OR	DAN209S	DIODE
	D24	ERA15-01	DIODE
	ZD21	MA4039(M)	ZENER DIODE
	ZD22	MA4047N(M)	ZENER DIODE
	ZD23	MA4047N(M)	ZENER DIODE
	R1	QRD14AJ-683Y	RESISTOR
	R2	QRD14AJ-683Y	RESISTOR
	R3	QRD14AJ-683Y	RESISTOR
	R4	QRD14AJ-683Y	RESISTOR
	R5	QRG029J-683A	OMF RESISTOR
	R6	QRX124J-R36X	MF RESISTOR
	R7	QRX124J-R36X	MF RESISTOR
	R8	QRD14AJ-100Y	RESISTOR
	R9	QRD146J-100S	RESISTOR
	R10	QRD146J-820S	RESISTOR
	R11	QRD14AJ-753Y	RESISTOR
	R12	QRD14AJ-104Y	RESISTOR
⚠	R13	QRD122J-105	RESISTOR
	R21	QRD123J-220S	RESISTOR
	R22	QRD14AJ-153Y	RESISTOR
	R23	QRD14AJ-512Y	RESISTOR
	R24	QRD14AJ-162Y	RESISTOR
	R25	QRD14AJ-102Y	RESISTOR
	R26	QRD14AJ-302Y	RESISTOR
	R27	QRD14AJ-514Y	RESISTOR
	R28	QRD14EJ-751	RESISTOR
	R29	QRD14AJ-241Y	RESISTOR
	R30	QRD14AJ-103Y	RESISTOR
	R31	QRD14AJ-161Y	RESISTOR
	R32	QRD14AJ-113Y	RESISTOR
	R33	QRD14AJ-221Y	RESISTOR
	R34	QRD14AJ-471Y	RESISTOR
	R35	QRD14AJ-271Y	RESISTOR
	R36	QRD14AJ-471Y	RESISTOR
	R37	QRD14AJ-472Y	RESISTOR
	R38	QRD14AJ-331Y	RESISTOR
	R39	QRD14AJ-331Y	RESISTOR
	R40	QRX016G-R10A	MF RESISTOR
	R41	QRD123J-152SX	RESISTOR
	VR21	QVZ3518-103	V RESISTOR , OUTPUT VOLTAGE
	OR	QVZ3523-103	V RESISTOR
	VR22	QVZ3518-103	V RESISTOR , CHARGING CURRENT
	OR	QVZ3523-103	V RESISTOR
⚠	C1	YU40302	MM CAPACITOR
⚠	OR	QFZ9031-104	MM.CAP
⚠	C2	YU41193	E CAPACITOR
	C3	QFD52GK-473	M CAPACITOR
	C4	QETC1VM-336	E CAPACITOR
	C5	QETC1VM-337	E CAPACITOR
⚠	C6	QCZ9045-222	CAPACITOR
⚠	C7	QCZ9045-222	CAPACITOR
⚠	C8	QCZ9045-222	CAPACITOR
⚠	C9	QCZ9045-222	CAPACITOR
⚠	C10	QCZ9045-222	CAPACITOR
⚠	C11	QCZ9045-222	CAPACITOR
	C12	QETC1HM-105	E CAPACITOR
	C21	QEZ0154-687	E CAPACITOR
	C22	QETC1CM-106	E CAPACITOR
	C23	QEZ0105-826	E CAPACITOR
	C24	QER41HM-105A	E CAPACITOR
	C25	QFLA1HK-472Z	M CAPACITOR
	C26	QFV41HJ-683	M CAPACITOR
	C27	QFV41HJ-104	M CAPACITOR
	C28	QFLA1HK-332Z	M CAPACITOR
	C29	YU40304	CAPACITOR
	C30	QFL41HJ-103	MY CAP
⚠	PHC1	PC111S	PHOTO COUPLER
⚠	L1	YU41130	COIL
⚠	L2	YU41206	COIL
	L21	YU41200	N CHOKE COIL
	L22	YU40754	TROIDAL COIL
	L23	PU54223-101K	COIL
⚠	X21	YU41137	C.RESONATOR
⚠	T1	YU41207	SW TRANS
	CN1	YU41166-4	HOUSING
⚠	TF1	YU41334	THERMAL FUSE
	J1	YU41196	DC JACK
⚠	HS1	YU41333A	HEAT SINK ASSY
⚠	HS2	YU41140	HEAT SINK (B)
⚠	F1	QMF51E2-1R0	FUSE, NOT INCL MAIN BOARD ASSY

4. SUB BOARD ASSEMBLY <02>

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
⚠	PWBA	YB30052A	SUB BOARD ASSY
⚠	IC51	M51977FP	IC
⚠	IC71	HA012611S1	IC
	Q71	UN2113	TRANSISTOR
	Q72	UN2113	TRANSISTOR
	Q73	UN2113	TRANSISTOR

#⚠	REF NO.	PART NO.	PART NAME, DESCRIPTION
	Q74	UN2213	TRANSISTOR
	Q75	UN2213	TRANSISTOR
	D71	MA151WK	DIODE
	R51	QRSA08J-182YN	RESISTOR
	R52	QRSA08J-473YN	RESISTOR
	R53	QRSA08J-223YN	RESISTOR
	R54	QRSA08J-183YN	RESISTOR
	R55	QRSA08J-163YN	RESISTOR
	R56	QRSA08J-474YN	RESISTOR
	R57	QRSA08J-470YN	RESISTOR
	R58	QRSA08J-154YN	RESISTOR
	R71	QRSA08J-431YN	RESISTOR
	R72	QRSA08J-751YN	RESISTOR
	R73	QRSA08J-103YN	RESISTOR
	R74	QRSA08J-472YN	RESISTOR
	R75	QRSA08J-104YN	RESISTOR
	R76	QRSA08J-472YN	RESISTOR
	R77	QRSA08J-332YN	RESISTOR
	R78	QRSA08J-622YN	RESISTOR
	R79	QRSA08J-752YN	RESISTOR
	R80	QRSA08J-271YN	RESISTOR
	R81	QRS188J-242YN	RESISTOR
	R82	QRS188J-133YN	RESISTOR
	R83	QRSA08J-622YN	RESISTOR
	C51	QCFA1HZ-104	CAPACITOR
	C52	QCFA1EZ-104	CAPACITOR
	C53	QCYA1HK-222	CAPACITOR
	C54	QCTA1CH-391	CAPACITOR
	C55	QCTA1CH-471	CAPACITOR
	C56	QCFA1HZ-104	CAPACITOR
	C71	QCFA1EZ-104	CAPACITOR
	C72	QCYA1HK-103	CAPACITOR
	J51	QRSA08J-0R0Y	RESISTOR
	J71	QRS188J-0R0Y	RESISTOR
	J72	QRS188J-0R0Y	RESISTOR
	J73	QRS188J-0R0Y	RESISTOR

* * *

5. SWITCH BOARD ASSEMBLY <03>

PWBA	YB40041A	SWITCH BOARD ASSY
SW1	YU41138	SWITCH
SW2	YU41138	SWITCH
CN2	YU41197-4	CONNECTOR

10.7 TECHNICAL INFORMATION

10.7.1 POWER ADAPTER PIN FUNCTION (IC71)

Pin No.	REF	IN/OUT	Note
1	R7	Input	L with battery inserted and SW1 ON.
2	R8	〃	H when DC Jack Connected
3	R9	Output	L at fast charge, LED 23 (red) lights. H at trickle charge, LED 23 (red) extinguished.
4	NC	—	
5	AV+	Input	5 V
6	AV−	〃	GND
7	AN	〃	Battery Voltage detector analog in put.
8	NC	—	
9	NC	—	
10	R6	—	Not used. Connected to ground.
11	X	Output	4 MHz
12	EX	Input	X'TAL OSC
13	VSS	Input	GND
14	RO	Output	L during charge Q23 ON. H at 24 hour limit, end trickle charge.
15	R1	〃	L at adapter mode.
16	NC	—	
17	R2	Input	Signal input for switching to fast charge. Shift to fast charge at H.
18	R3	Output	L out put at fast charge Q72 ON. H at fast charge completion.
19	R4	〃	L output at trickle charge, LED 22 (green) lights. L mainteined also after 24 hour limit.
20	R5	〃	L output at adapter mode, Q71 ON.
21	VSS	Input	GND
22	TEST	〃	GND
23	RESET	〃	Initialize at L level.
24	VCC	〃	5 V

Table 10-1 IC71 Pin function

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TABLE OF CONTENTS

Section Title Page

PARTS REPLACEMENT NOTES

5. CHARTS AND DIAGRAMS
5.1 CIRCUIT BOARD LOCATIONS 5-1
5.2 SCHEMATIC DIAGRAM NOTES 5-2
5.3 REPLACING SUBMINIATURE "CHIP" PARTS 5-3
5.4 KEY TO ABBREVIATIONS 5-4
5.5 SEMICONDUCTOR SHAPES 5-5
5.6 REGULATOR (MAIN) SCHEMATIC DIAGRAM 5-6
5.7 AUDIO (MAIN) AND MIC AMP (Y/C) SCHEMATIC DIAGRAMS 5-7
5.8 MECHANISM CONTROL (MAIN) SCHEMATIC DIAGRAM 5-8
5.9 SERVO (MAIN) SCHEMATIC DIAGRAM 5-9
5.10 MAIN (REGULATOR/AUDIO/MECHACON/SERVO) CIRCUIT BOARD 5-10
5.11 Y/C SCHEMATIC DIAGRAM 5-12
5.12 Y/C CIRCUIT BOARD 5-13
5.13 DRUM MDA SCHEMATIC DIAGRAM 5-14
5.14 DRUM MDA, UPPER DRUM AND TRIGGER SWITCH CIRCUIT BOARDS 5-15
5.15 OPERATION SCHEMATIC DIAGRAM 5-15
5.16 VIDEO SCHEMATIC DIAGRAM 5-16
5.17 VIDEO AND FAW SUB CIRCUIT BOARDS 5-18
5.18 SSG SCHEMATIC DIAGRAM 5-20
5.19 SSG CIRCUIT BOARD 5-21
5.20 AF SCHEMATIC DIAGRAM 5-22
5.21 AF CIRCUIT BOARD 5-23
5.22 ELECTRICAL VIEWFINDER SCHEMATIC DIAGRAM 5-24
5.23 ELECTRICAL VIEWFINDER CIRCUIT BOARD 5-25
5.24 PRE/REC SCHEMATIC DIATRAM 5-26

7. PARTS LIST
7.1 STANDARD PART NUMBER CODING 7-2
MAIN BOARD ASSEMBLY <01> 7-6
Y/C BOARD ASSEMBLY <02> 7-10
PRE REC BOARD ASSEMBLY <03> 7-13
DRUM MDA BOARD ASSEMBLY <04> 7-13
TRIGGER SW BOARD ASSEMBLY <05> 7-14
SENSOR BOARD ASSEMBLY <08> 7-14
VIDEO BOARD ASSEMBLY <11> 7-14
SSG BOARD ASSEMBLY <12> 7-18
AF BOARD ASSEMBLY <13> 7-20
CTL BOARD ASSEMBLY <14> 7-22
DRUM BOARD ASSEMBLY <30> 7-22
E. VF BOARD ASSEMBLY <50> 7-22
END SENSOR BRACKET ASSEMBLY <55> 7-23

PARTS REPLACEMENT NOTES

Ref. No.	Previous Parts No.	New Parts No.	Part Name
	MAIN BOARD ASSEMBLY <01>		
PWBA	YB10045F-02	YB10045F-03	MAIN BOARD ASSY
IC106	–	TC4S66F	IC
IC107	–	TC4S66F	IC
IC401	M37412M4	VC2524A	IC
Q119	–	DTC144EU	TRANSISTOR
D106	–	DA204U	DIODE
D107	–	DA204U	DIODE
D108	–	DA204U	DIODE
D301	–	RD9.1E(B1-3)	ZENER DIODE
D405	–	RD6.8M(B1)	ZENER DIODE
	or RD6.8M(B2)	ZENER DIODE	
D407	–	RD6.8E(B1B2)	ZENER DIODE
R1	QRD161J-683	QRD14DJ-683	RESISTOR
R104	–	NRSA63J-103N	RESISTOR
R182	–	NRSA63J-473N	RESISTOR
R502	NRSA63J-102N	NRSA63J-0R0A	RESISTOR
C108	–	QCYA1HK-102	CAPACITOR
C127	QEPA1CM-226	QENF1CM-226	E CAPACITOR
C156	–	QCFA1EZ-104	CAPACITOR
C343	–	NCF31CZ-104A	CAPACITOR
C417	–	QCFA1EZ-104	CAPACITOR
DD1	YU41251-1-1	YU41147-1-2	DC-DC CONVERTER
J1	YU40690	YU40690-1-1	DC JACK
SLD2	YQ20264	YQ20264-1-1	FE SHIELD U
SLD5	–	YU41345	SHIELD PLATE
SLD6	–	YQ41465	SHIELD PLATE
SLD7	–	YQ41454	DC-DC CON. SHIELD
CN11	–	YU40096-5	CAP HOUSING
	– CAPSTAN LOCK-2 BOARD ASSEMBLY –		
PWBA	YB20264A	–	–
IC106	TC4S66F	–	–
IC107	TC4S66F	–	–
Q119	DTC144EU	–	–
D106	DA204K	–	–
D108	DA204K	–	–
R104	QRSA08J-103YN	–	–
R182	QRSA08J-473YN	–	–
C108	QCYA1HK-102	–	–

Ref. No.	Previous Parts No.	New Parts No.	Part Name
C156	QCFA1EZ-104	–	–
	Y/C BOARD ASSEMBLY <02>		
PWBA	YB10047A-02	YB10047A-03	Y/C BOARD ASSY
R64	NRSA63J-121N	NRSA63J-561N	RESISTOR
R74	NRSA63J-271N	NRSA63J-221N	RESISTOR
R109	NRSA63J-821N	NRSA63J-911N	RESISTOR
R131	–	NRSA63J-151N	RESISTOR
R132	–	NRSA63J-680N	RESISTOR
R206	NRSA63J-473N	NRSA63J-223N	RESISTOR
C40	QER61CM-106GZ	QER41CM-106GZ	E CAPACITOR
C44	QER61CM-106GZ	QER41CM-106GZ	E CAPACITOR
BPF101	–	YU40946	BAND PASS FILTER
BPF102	–	YU41019	BAND PASS FILTER
SPC1	YQM30029-31	–	–
	PRE REC BOARD ASSEMBLY <03>		
PWBA	BW7719B	BW7719C	PRE/REC AMP BOARD ASSY
	DRUM MDA BOARD ASSEMBLY <04>		
R15	QRSA08J-431YN	NRVA62D-431N	RESISTOR
R16	QRSA08J-471YN	NRVA62D-471N	RESISTOR
	VIDEO BOARD ASSEMBLY <11>		
PWBA	YB20286G1	YB20286G1-02	VIDEO BOARD ASSY
	or YB20220G1-03	–	–
IC1	HA118025MP	HA118025MP	IC
	–	or TC7S04F	IC
R38	QRSA08J-471YN	QRSA08J-0R0Y	RESISTOR
R41	QRSA08J-150YN	QRSA08J-121YN	RESISTOR
R179	NRVA62D-363N	NRSA63J-0R0A	RESISTOR
R180	QRSA08J-0R0Y	NRVA62D-363N	RESISTOR
R235	QRD161J-222	–	–
C201	–	PU56274-200	TRIMMER CAPACITOR
	–	or PU59867-200X	TRIMMER CAPACITOR
DL2	YU40637	YU40637	EQUALIZER
	–	or YU40720	EQUALIZER

Ref. No.	Previous Parts No.	New Parts No.	Part Name
CF201	YU41160	YU40141	CRYSTAL RESONATOR
CF202	YU40141	YU41160	CERAMIC OSC
SLD1	YU41339	—	—
	— GATE BOARD ASSEMBLY —		
PWBA	YB20214B	YB20297A	GATE BOARD ASSY
IC207	TC7S04F	—	—
R1	—	QRSA08J-222YN	RESISTOR
	SSG BOARD ASSEMBLY <12>		
PWBA	YB20286G2	YB20286G2-02	SSG BOARD ASSY
	or YB20220G2-03	—	—
R333	NRVA62D-162N	NRVA62D-163N	RESISTOR
L301	YU40740-220KY	YU40740-220K	COIL
	—	YU41135-220K	COIL
L302	YU40740-101KY	YU40740-101K	COIL
	—	YU41135-101K	COIL
L303	YU40740-101KY	YU40740-101K	COIL
	—	YU41135-101K	COIL
L304	YU40740-101KY	YU40740-101K	COIL
	—	YU41135-101K	COIL
L305	YU40740-101KY	YU40740-101K	COIL
	—	YU41135-101K	COIL
L306	YU40740-220KY	YU40740-220K	COIL
	—	YU41135-220K	COIL
L307	YU40740-101KY	YU40740-101K	COIL
	—	YU41135-101K	COIL
L308	YU40740-221KY	YU40740-221K	COIL
	—	YU41135-221K	COIL
L309	YU40740-220KY	YU40740-220K	COIL
	—	YU41135-220K	COIL
L310	YU40740-220KY	YU40740-220K	COIL
	—	YU41135-220K	COIL
L311	YU40740-220KY	YU40740-220K	COIL
	—	YU41135-220K	COIL
L312	YU40740-220KY	YU40740-220K	COIL
	—	YU41135-220K	COIL

Ref. No.	Previous Parts No.	New Parts No.	Part Name
	AF BOARD ASSEMBLY <13>		
PWBA	YB20239A-01	YB20239B-01	AF BOARD ASSY
IC7	MN18888JWT	MN18888JWT-2	IC
R84	NRSA63J-0R0A	–	–
R85	NRSA63J-0R0A	–	–
R107	NVP1302-332N	NVP1302-103N	V RESISTOR,OFF SET
R108	NRSA63J-472N	NRSA63J-222N	RESISTOR
C7	NEH31CM-106NZ	NEA21EM-475NZ	E CAPACITOR
	or NEH11CM-106NZ	or NEH11EM-475NZ	E CAPACITOR
C15	QEF80GM-475XB	NEE20GM-475RS	TANTAL CAPACITOR
C17	QEF80GM-475XB	NEE20GM-475RS	TANTAL CAPACITOR
C19	QEF80GM-475XB	NEE20GM-475RS	TANTAL CAPACITOR
C20	QEF80GM-475XB	NEE20GM-475RS	TANTAL CAPACITOR
C22	QEF80GM-475XB	NEE20GM-475RS	TANTAL CAPACITOR
C23	QEF80GM-475XB	NEE20GM-475RS	TANTAL CAPACITOR
C25	QEF80GM-475XB	NEE20GM-475RS	TANTAL CAPACITOR
C26	QEF80GM-475XB	NEE20GM-475RS	TANTAL CAPACITOR
C29	QEF80GM-475XB	NEE20GM-475RS	TANTAL CAPACITOR
C30	QEF80GM-475XB	NEE20GM-475RS	TANTAL CAPACITOR
C31	QEF80GM-475XB	NEE20GM-475RS	TANTAL CAPACITOR
C39	QEF80GM-105XB	NEE20GM-105RS	TANTAL CAPACITOR
C50	–	NEE21CM-105RS	TANTAL CAPACITOR
	– AFE BOARD ASSEMBLY –		
PWBA	YB20287A	–	–
IC9	TC7S00F	–	–
D1	MA141WK	–	–
R129	QRSA08J-223YN	–	–
R130	QRSA08J-0R0Y	–	–
C50	QEF81CM-105XB	–	–
	CTL BOARD ASSEMBLY <14>		
C403	–	QCFA1EZ-104	CAPACITOR